Diatomaceous Earth Occurrences in Nova Scotia

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Economic Geology Series 90-1

Nova Scotia

Department of Mines and Energy

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Halifax, Nova Scotia
1990

90-05911/

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CHAPTER 1. INTRODUCTION

PHYSICAL PROPERTIES AND USES OF DIATOMITE

Diatomaceous earth or diatomite is a siliceous sedimentary material formed by the accumulation of the skeletal remains of microscopic plants commonly known as diatoms. It is estimated that there are about 300 genera of these plants with as many as 16 000 species occurring world wide. These tiny one celled plants are capable of removing soluble silica from their environment to produce opaline or hydrous silica cell walls or shells which, when the organisms die, settle out and accumulate to form thick beds of sediment. One reference stated that 1 cm^3 of diatomite may contain as many as 24 000 000 shells (Snell and Ettre, 1971). The most notable character of these shells or minute particles is that they are permeated by pores forming a delicate lace like structure which gives diatomite its unique properties. The pores in the shells are very small (1-3 μm) in diameter and often many species have an even finer network of secondary pores (<0.5 μm) within the primary pores (Figs. 1 and 2).

The diatom shells and fragments can range in size from 1-1000 μm, however the average size is between 50-100 μm depending on species and growth conditions. Depending on species the shape of the shells can also vary, but are frequently boat shaped or wheel like in appearance.

Diatomite possesses properties that no other silica product or mineral powder can equal (Table 1). The unique intricate structure of diatomite particles (diatoms) and its chemical stability make it desirable as a filter aid. Currently over half of the world diatomite production is used as a filter aid in beverage industries to help clarify wine, beer and fruit juices and in water purification systems. The structure of the diatom shell results in a low bulk density powder, with 90% of its volume composed of interconnected voids and pores. Dry bulk density ranges from 128-320 kg/m^3 with absorbency capabilities 2-2.5 times its dry weight, yet it does not readily absorb water from the air. The high pore and void volume provide excellent permeability and filtration capacity, capable of removing particles <0.5 μm from liquids (Manville, 1983).

The fusion of diatomite particles using a flux such as calcium hydroxide in flux calcining, produces large diverse shaped particles that are capable of absorbing up to 5-5.5 times their dry weight. Flux-calcined diatomite also tends to be very white because of the chemical reactions which cause iron compounds to enter a glass phase making them transparent (Kirk-Othmer, 1979).

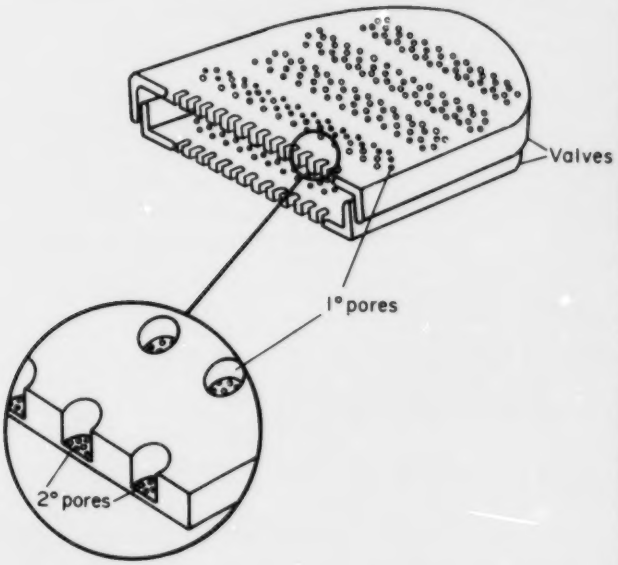

Figure 1. Detailed schematic of diatom shell.

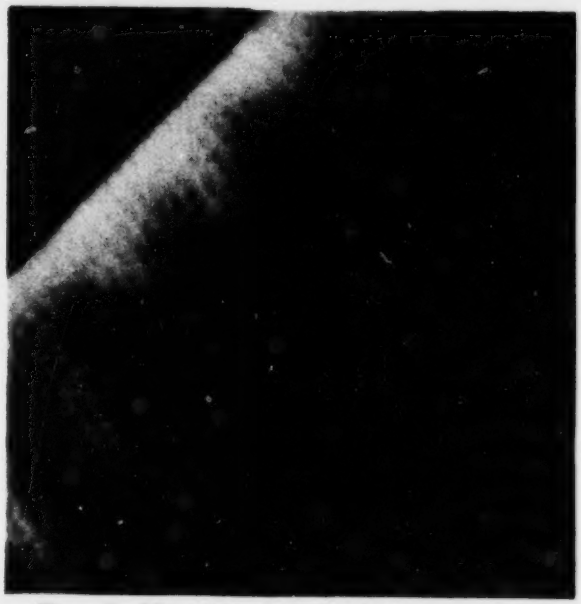

Figure 2. Microphotograph of typical structure and form of diatom.

Table 1. Typical physical characteristics of diatomite*.

Wet Weight (kg/m^3)	256-336
Loose Weight (kg/m^3)	128-320
pH	7.0
Surface Area (M^2/g)	10-20
Colour	grey, buff, white, pink
Refractive Index	1.45-1.50
Specific Gravity	2.1-2.3
% passing 325 mesh	92-98
Oil Absorption (lbs/100 lbs)	100-215
Porosity (%)	65-85
Water Absorption (% by weight)	86-240
Median Pore size (μm)	1.5-22.0
% Soluble	0.10-0.15
Particle Size Range (μm)	(1-8), (2-40), (0.7-125)

*product dependent (Manville, 1986)

Except under specific acidic and highly alkaline conditions, diatomite is inert making it desirable as both a filter aid and filler/extender (Fig. 3).

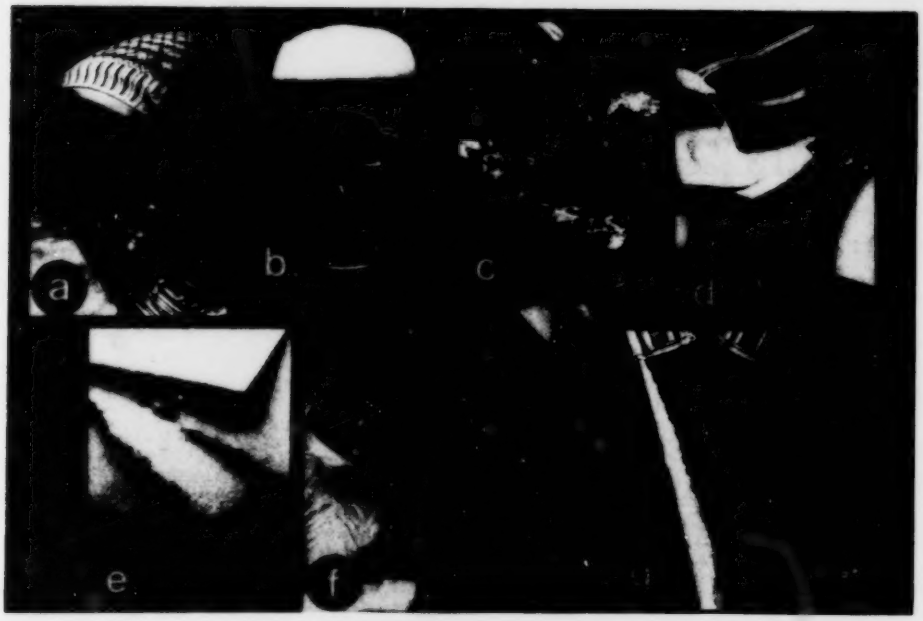

Figure 3. Applications for diatomite: (a) rubber and plastics; (b) beer; (c) pesticides and fertilizers; (d) mild abrasives in polishes; (e) paper products; (f) filtration and clarification; and (g) stabilizers and absorbents

Levels of nonsilica components (aluminum, iron and other oxide compounds) in the diatomite range from 5-15%. The level of soluble impurities in diatomite affects its final use. Typical analyses of diatomite products suggest 86-92% SiO_2 with 3-4% aluminum oxide (Al_2O_3); 1-2% iron (Fe_2O_3); and <1% phosphate (P_2O_5), titanium (TiO_2), calcium (CaO) and magnesium (MgO); and 1-3% sodium (NaO) plus potassium (K_2O) (Manville, 1986) (Table 2).

Table 2. Typical chemical characteristics of diatomite* (per cent)

SiO_2	86-92
Al_2O_3	3.8-4.0
Fe_2O_3	1.2-1.5
P_2O_5	0.2-0.3
TiO_2	0.2
CaO	0.5-0.8
MgO	0.6
(Alkali) $Na_2O + K_2O$	1.0-3.3
Loss on Ignition	0.2-3.6

*product dependent (Manville, 1986)

Under alkali conditions such as concrete reactions, diatomite reacts with excess calcium in the mixture to form a tightened mixture that is less susceptible to saltwater erosion, efflorescence and sulphate attack. Diatomite also improves workability, reduces segregation and helps to increase the strength of the mixture by creating a more uniform mix of components (Steeves, unpublished paper, 1988; MacEacheron, unpublished paper, 1988).

Diatomite has been used as a functional filler since A.D. 532 when it was used to form light weight bricks for construction of a cathedral in Istanbul (Kirk-Othmer, 1979). It was also used in the 19th Century as an absorbent in the manufacture of dynamite from nitroglycerin. However, it was not

until the early part of the 20th Century that the uses of diatomite began to expand to inert fillers, extenders and more significantly as filter aids (Kirk-Othmer, 1979).

Diatomite was first used as a filter aid in the treating of sewage sludge in waste water treatment facilities in the United States. It was used in sugar refining and subsequently many aspects of the food and beverage industry (Kirk-Othmer, 1979). In the brewing and beverage industries diatomite is used to filter the raw water, settle out the majority of the fines, clarify the beverage as well as filter out particles from effluent leaving the process. In Nova Scotia diatomite is being used for filtration in the production of beer, apple juice and wine. In the early 1900s diatomite was used in sugar refining (Eardley-Wilmot, 1928).

As a filter aid diatomite is used as a precoat on filter septum or membranes. The diatomite is fed into the filter prior to use, where it collects on the feed side of these membranes. Once the precoat is formed the product can be filtered quickly to very high clarity. Often additional diatomite, as bodyfeed, is added to the product to allow presedimentation of fines or to supplement the precoat during the filtration process (Manville, 1983).

Filler applications of diatomite are based upon its low bulk density, high absorbency, neutrality and colour. Diatomite is used as a filler to increase bulk without causing too great an increase in weight; as an extender to reduce costs of expensive components in paint and paper; as a diluting agent in toxicants and fertilizers; and as a catalyst carrier in metallurgical reactions. Other uses include an insulation material, pozzuolane in concrete reactions, an abrasive in fine polishes and an antiblocking agent in the manufacture of polyoelfin plastics (Table 3).

Table 3. Some typical applications for diatomite.*

Filter Aids	**Examples**
Alcoholic beverages	beer, wine
Water systems	swimming pools, drinking water, processing water
Food processing	vinegars, juices
Fillers/Extenders	**Examples**
Carriers	agricultural toxicants, fertilizers, seed inoculants
Conditioners	food products
Stabilizers	liquid\dry pourable powders
Extenders	rubber and resin
Flattening agents	paint and plastics
Paper products	bulking agent, drainage aid, opacity builder, fibre disperser
Abrasives	grinding aids
Absorbents	
Reactive silica	fluorine removal, acetylene storage
Insulation	safes, vaults, firebrick
Additive	concrete, mortars, plasters, stuccos, asphalt
Matchheads	
Dental impressions	
Antiblocking agents	sheet film plastics
Anticaking agents	
Air drilling	
Catalyst carrier	

*Modified from Manville (1986)

ORIGIN AND MODE OF OCCURRENCE

Although diatomaceous earth is the proper term for the sediments found in Nova Scotia, it is commonly referred to as diatomite which, in fact, is the mineral or rock form resulting from geological compaction or weak alteration of the diatomaceous sediments. The occurrence of large numbers of diatoms is believed to have begun in the Late Cretaceous period, however most of the commercial deposits are Late Miocene to Early Pliocene. These deposits are typified by those along the western coast of North America which occur in large sedimentary basins that have been buried under clastic sediments and subsequently uplifted during further mountain building events. The diatoms were not significantly altered during this process although some compaction took place. The diatomite is found to be several metres thick and often spread over several square kilometres (Kadey, 1983).

The sediments typically found in Nova Scotia are primarily of Recent origin (10-15 ka), occurring in many lakes and bogs throughout the Province. The sediment ranges from a soft semigelatinous mud, grey to greenish brown in colour to a dense chalky, clay like sediment often snow white in colour (Fig. 4). In some instances, the dense white diatomaceous earth was found to be stained with brilliant orange streaks (iron related) or in some cases dark green stains (believed to be biogenic in origin). These deposits are usually <3 m thick, (the white material usually <1 m thick) over an area of a few hectares.

Figure 4. Diatomite sample from the New Annan area, Colchester County

Nova Scotia's diatomaceous earth deposits and occurrences are primarily found in small spring-fed catchment basins near the head of watersheds within terrane dominated by intrusive or metasedimentary rocks. Weathering of the local bedrock and glacial drift has released silica to the ground water system where it is then metabolized by the tiny plants to form their cell walls which then accumulated to form diatomaceous earth. Layers of thin, pure diatomaceous earth are often found close to groundwater sources, and higher organic content sediments tend to occur further from these sources (Fig. 5). Often fine clay particles and organic matter can be found mixed with the diatom remains. Very high levels of these contaminants result in diatomaceous peat, ooze or gyttja. Diatomaceous earth has been found to have between 10 and 60% organic content depending upon the depositional environment, however, with drying and sintering, organic residues can be lowered, leaving 80-90% silica with varying amounts of alumina, iron and alkalis resulting from included clay particles.

The rate which diatomaceous earth accumulates depends on a number of factors relating to the reproductive capabilities of the organisms; primarily the quality of the environment in which they are found and the amount of soluble silica entering the system. Once silica has been transformed to the opaline form it is no longer available to the ecosystem for use by subsequent generations of diatoms. The reproductive rate of diatoms varies with species, from 2-3 times per day to weekly (Kirk-Othmer, 1979). One diatom may have as many as 100 million descendants within 30 days. The following environmental factors play a major role in the rate at which these organisms reproduce and accumulate:

(1) a continuous supply of soluble silica,

(2) high levels of nutrients in the form of phosphates and nitrates to maintain population growth,

(3) low levels of toxic solubles, in particular alkalis, which inhibit metabolism,

(4) existence of a catchment basin in close proximity to the source of soluble silica to allow settling out of the shells,

(5) low rheological flows to reduce the number of introduced clastics, and

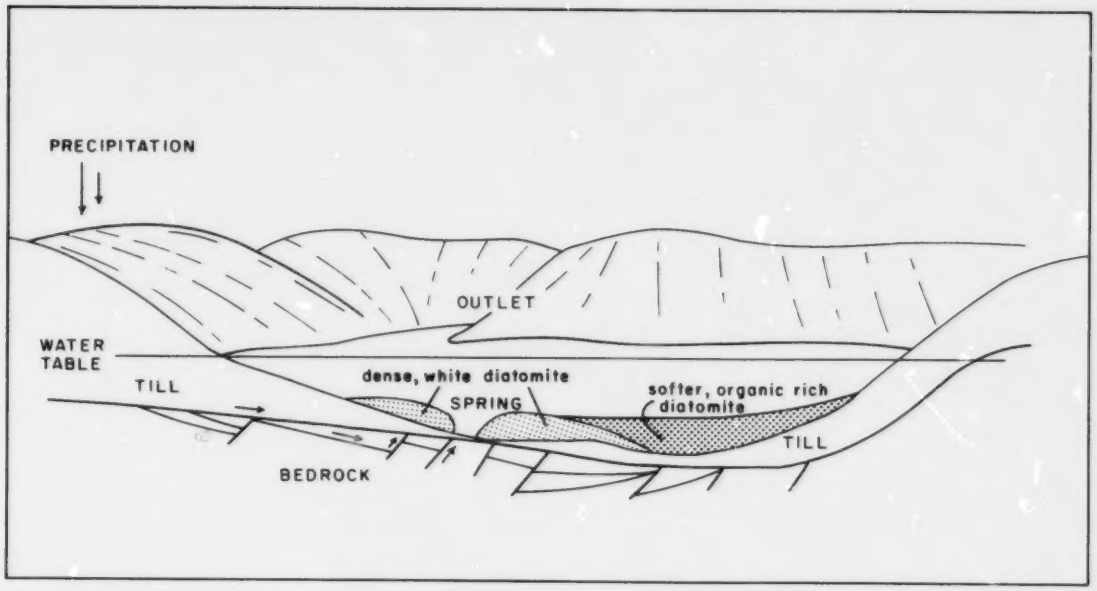

Figure 5. Model of diatomite accumulation

(6) cool, pristine environments that limit the growth and accumulation of nondiatomaceous organic matter.

Most of the reported occurrences of diatomaceous earth are found in the Cobequid Highlands associated with the plutonic bodies of granite and granodiorite of Devono-Carboniferous age, and in the Antigonish Highlands in proximity to Devonian igneous plugs within older (Early Cambrian) felsic volcanics (Fig. 6). Deposits of diatomaceous sediments in these regions tend to have less organic loads indicating favourable conditions for abundant diatom production.

Deposits are also known to occur in the eastern and northern igneous terrane of Cape Breton Island. Occurrences found here are similar to those of northern mainland Nova Scotia.

Significant deposits are also found in association with Triassic basalt flows which make up North Mountain and, in particular, occur along Digby Neck. The diatomaceous sediment in this area is rarely pure. It is laden with organics possibly indicating fairly eutrophic environments or low levels of soluble silica allowing for accumulation of vegetable matter along with the diatoms.

HISTORY OF DIATOMITE PRODUCTION IN NOVA SCOTIA

Between 1921 and 1955 about 11 500 t of dry finished diatomaceous earth were produced from Nova Scotia mining operations (Nova Scotia Department of Mines, Annual Reports, 1921 to 1955). Most of this material was sent abroad to be used in the manufacture of ceramics, rubber, polishes and firebrick. The majority of the production took place from deposits in the Cobequid Highlands and Digby Neck.

A small amount of diatomaceous earth was produced from deposits in northeastern Cape Breton, however little information is available on this operation. The Victoria Infusorial Earth Co. mined diatomaceous earth from small lakes in the vicinity of St. Anns-North River, Victoria County, prior(?) to 1900. One of the products, a bath brick, was donated to the Nova Scotia Museum in 1900 as an example of the North Sydney based Company's products (Nova Scotia Museum, 979, 980). Recent investigation by the author of the old workings found only remnants of the processing plant foundations and various artifacts such as hinges, boiler housing and wagon parts.

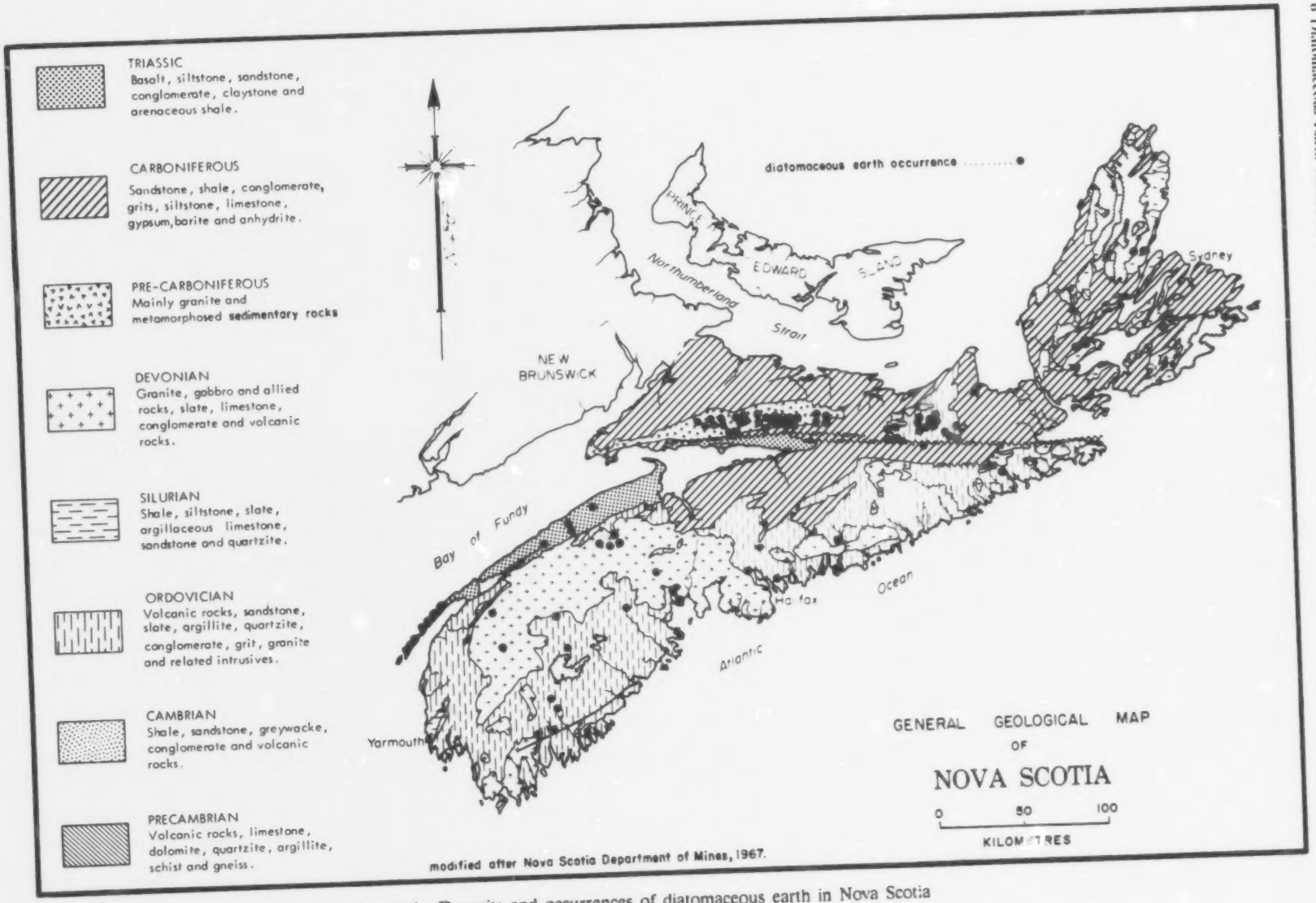

Figure 6. Deposits and occurrences of diatomaceous earth in Nova Scotia

Diatomaceous earth was reported and developed at Silica Lake near Castlereagh, Colchester County, in 1889 by Oxford Tripoli Company. In 1893, the operation burned and the Company ceased operations. The following year it was sold to an American firm, The Fossil Flour Company (Fig. 7) (Roy Kennedy, personal communication).

After the close of the Castlereagh Mine in 1923 the Oxford Tripoli Company purchased land parcels about 20 km south of Tatamagouche and a 20 year lease was taken out on diatomaceous earth deposits in the East New Annan area (Figs. 8 and 9) (Colchester Historical Society, personal communication). Development of these deposits at Silica Lake,

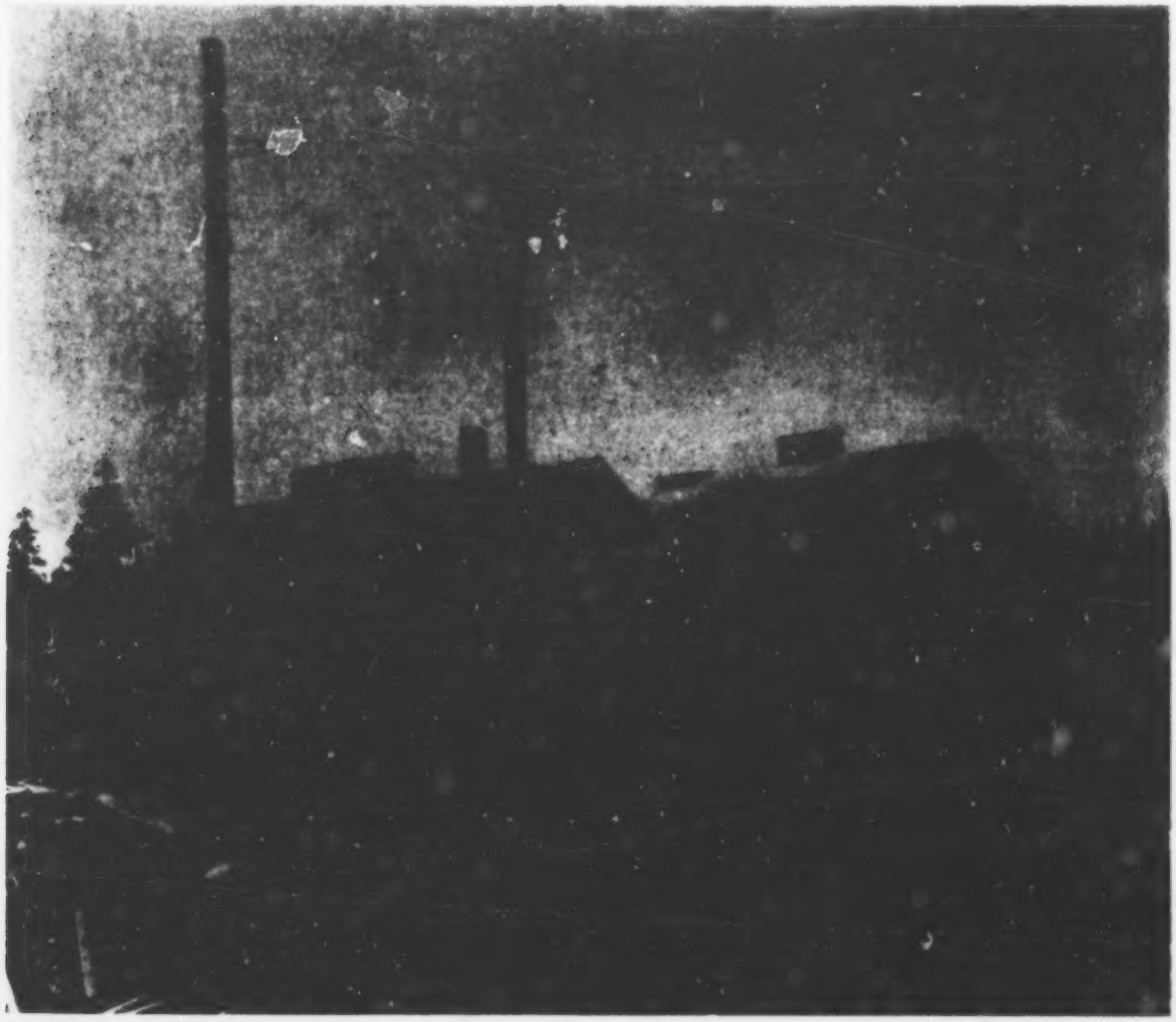

Figure 7. Fossil Flour Company plant at Castlereagh, Colchester County (courtesy of the Colchester Historical Society)

Production ceased in 1923 when the deposit was believed exhausted. The operation produced about 540 t of diatomite product per year which was sold mainly in the United States to rubber manufacturers (Goodrich, Goodyear and The American Rubber Company) (Colchester Historical Society, personal communication).

Lockerby Pond (local name), Gards Pond and Conkey Pond (local name) began in 1926 with the first production late in that year. Silica Lake had 1-5 m of diatomaceous earth over an area of 1.6 ha. Silica Lake was drained and a 10 hp pump was used to maintain the water level while it was being worked. Lockerby Pond was mined using a dragline. Its

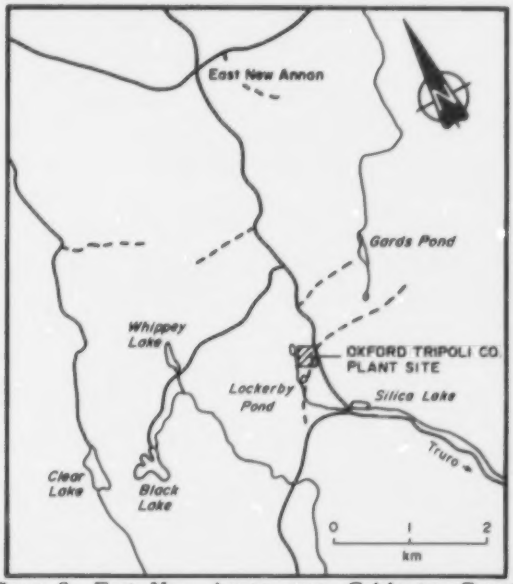

Figure 8. East New Annan area, Colchester County showing diatomite lakes and Oxford Tripoli Company's plant site (1928-1940)

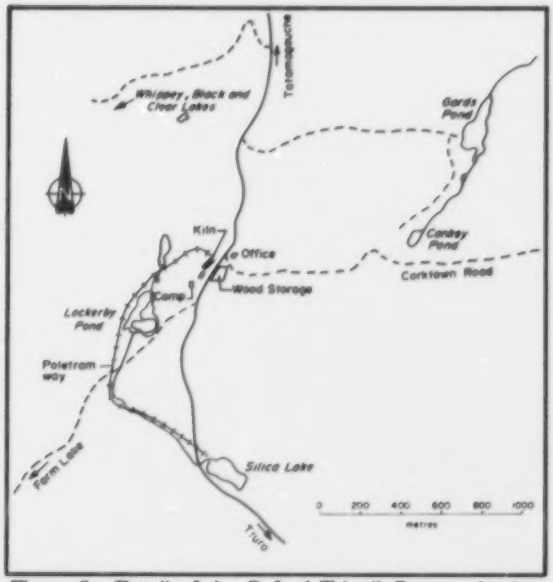

Figure 9. Detail of the Oxford Tripoli Company's plant location near East New Annan, Colchester County

diatomaceous earth was quite dark in colour and was reported to be 2.4 m thick. Gards Pond was mined in the winter months. It was drained and hand dug. Roughly half of its reserves are reported to still be intact. Conkey Pond is only 0.2 ha in size, but it contains about 0.9 m of pure, solid, white diatomite. Conkey Pond was also drained and only partially excavated. During this same period Clear Lake, about 3.2 km to the west of Silica Lake was examined and may have been partially mined, however the Company abandoned the site claiming lack of suitable reserves (Colchester Historical Society, personal communication).

The Oxford Tripoli Company constructed its plant on the western side of the Truro road just above the road to Farm Lake (Fig. 9). This operation was capable of producing 8-9 t of dry product per day, however the plant does not appear to have worked at full capacity because only about 7700 t of dry finished product were produced between 1928 and 1940, when the plant was destroyed by fire. Finished diatomaceous earth was exported to a number of markets including the St. Lawrence Sugar Refinery, Dartmouth; St. Helen's Cable and Glass, England; Goodyear Tire Manufactures, Haverstraw, New York; Akron, Ohio; and Ontario as a polishing agent. Operations did not continue after the 1940 fire (Colchester Historical Society, personal communication).

In 1928, Oxford Tripoli Company merged with Scotia Diatom Products to form International Diatomite Industries Ltd. Prior to this, Scotia Diatom Products were developing operations at a large deposit of diatomaceous earth near Little River, Digby Neck, called Factory Bog (Burroughs, 1929) (Figs. 10 and 11).

Exploration for diatomaceous earth began at Little River around 1900, however it was 1917 before ditching was well underway. In 1927, the property was purchased by Scotia Diatom Products. The operation closed in 1934, due to many possible reasons including top heavy management, Depression era, inefficient production and high overhead costs. (Wightman, personal communication, 1986).

The Factory Bog, Little River deposit was worked again from 1942-1955 by G. F. Wightman (Fig. 11). About 900 t of diatomite were produced and exported to Ontario for use in the manufacture of firebrick. The operation was set up specifically to meet the needs of the contract for the firebrick and when the contract ran out the operation ceased (Wightman, personal communication, 1986).

The old workings and the plant site are still evident although the buildings and kiln have long since gone. The deposit, which was once a bog, is now flooded, however water levels fluctuate a great deal allowing access to the extensive reserves that remain in this deposit (Fig. 12).

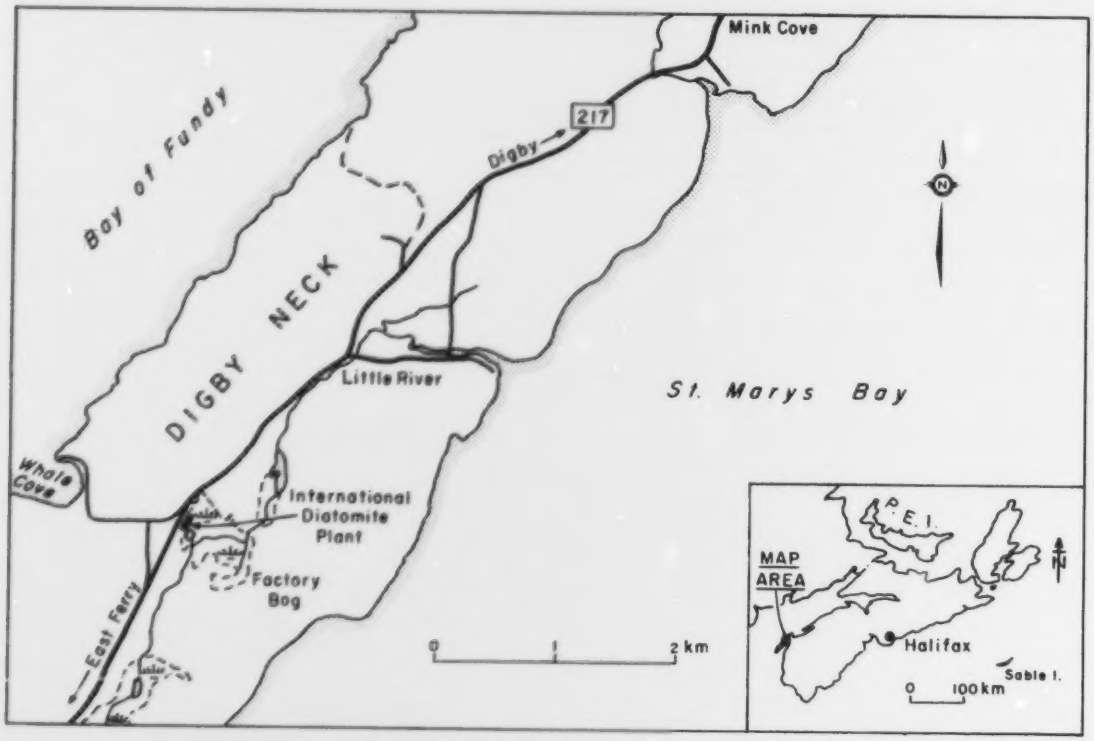

Figure 10. Location of the Factory Bog, Little River, Digby Neck

Figure 11. Hand digging and drying of diatomite at Little River, Digby Neck in the mid-fifties

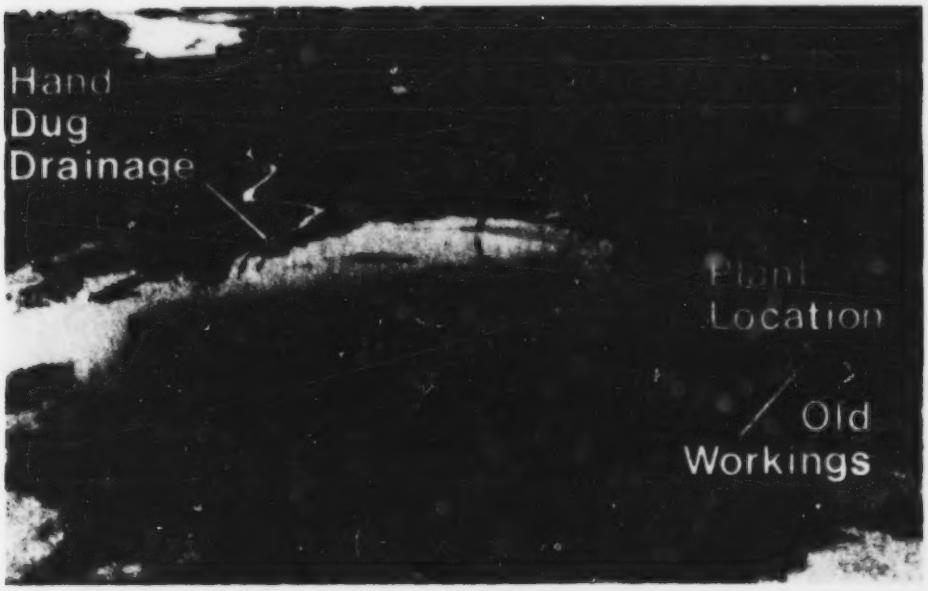

Figure 12. Aerial view of the Factory Bog, Little River, Digby Neck (November 1987)

CURRENT MINING AND PROCESSING OF DIATOMITE

Diatomaceous sediments were mined from a number of small lakes in northern Nova Scotia and bogs along Digby Neck in the early half of this Century, however production ceased in the mid fifties because markets were lost to the products coming from the Miocene deposits of the Western United States.

The majority of the world diatomite supply is extracted from these Miocene deposits which are usually mined from quarries or open-pit operations (Kadey, 1983) (Fig. 13). Blasting and the use of heavy earth moving equipment is the general means of extracting the crude material from deposits that may be as thick as 300 m and extend over several square kilometres. In many locations outside the United States, small family owned operations currently produce crude material which is mined underground as well as in open-pits and quarries. This material is solar dried prior to refining (Kadey, 1983). Iceland, crude diatomite is dredged from beneath 1 m or more of water in Lake Myrvatn. The crude material is then dried using nearby geothermal energy (Manville, personal communication, 1987).

Once the crude diatomite has been dried it is then carefully pulverized to preserve the integrity of the delicate shell structure. The powdered material is further dried, air milled and refined using cyclones and baghouse facilities to separate and grade diatomite products (Fig. 14). Materials resulting from this process are normally referred to as **natural powders**. Heating the diatomite to the point of incipient fusion results in partial agglomeration and colour alteration of the diatomite. The larger particles provide higher rate of flow in filtering applications. This process of sintering is referred to as calcining and the resultant products as **calcined diatomite**. Calcined diatomite normally has a pinkish cast that inhibits its marketability as a filler. To alleviate this problem reagents or fluxes such as soda ash are often added to the refining process. The reaction of the flux and the iron component in the diatomite results in a chemical alteration which changes the colour of the product to white (Kirk-Othmer, 1979; Snell and Ettre, 1971). This material is commonly referred to as **flux calcined diatomite**. This material is fairly expensive to produce and is usually made to suit specific uses in filtration and special filler applications.

ECONOMICS OF DIATOMITE PRODUCTION

Approximately 1.7 million t of diatomite are produced annually, with about one-third of world production coming from the United States, primarily from California, Nevada and Washington. The U.S.S.R. and Romania, followed closely behind by France, are the only other major producers (Fig. 15; Table 4) (Pettifer, 1982; Kadey, 1983; Miles, 1987).

The growth rate in diatomite markets is reported to be small (1% per annum) (Table 5), however the cost of shipping this product is high. The published shipping rate of diatomite from west coast to east is about $110 (U.S.) per tonne with an average value of $220 (U.S.) (f.o.b. plant) (Miles, 1987). A recent

Figure 13. Diatomite mining at Lompoc, California

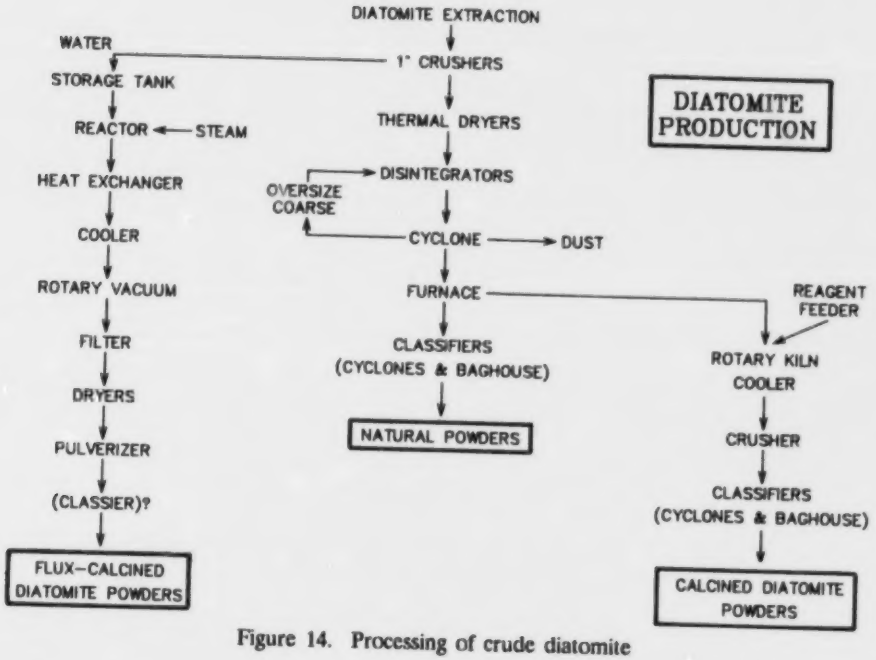

Figure 14. Processing of crude diatomite

1985 PRODUCERS OF DIATOMITE
LEGEND
1000 tonnes of diatomite produced in 1985.
* +83 000 tonnes of Meior
Based on figures from Industrial Minerals, 1987

Figure 15. Countries producing diatomite in 1985

evaluation of current diatomite use in Atlantic Canada indicates the market value of this material to be approximately $500-550 per tonne.

Table 4. Diatomite production by country for 1985.*

Country	Tonnes (000s)
USA	575
Romania	300
USSR	245
France	250
Others	400
Total	1770

*modified after Miles, 1987

The amount of diatomite used in the local area is small, restricted almost entirely to breweries and food processing industries as a filter aid. Diatomite is not used currently in Nova Scotia as a filler in numerous products such as paint, paper and fertilizers or as an absorbent or chemical carrier, however its use would potentially increase if a suitable product could be delivered to manufacturers at a competitive price.

Table 5. United States diatomite consumption by principal use, 1985.*

Use	%
Filtration	66
Filler	21
Insulation Products	1
Other	12

*after Miles, 1987

SCOPE AND METHODOLOGY

Scope

In order to investigate the potential and extent of the known diatomaceous earth occurrences in Nova Scotia, early records of diatomite occurrences consisting of occurrence listings and detailed assessment reports were researched. To evaluate the

significance of the diatomite occurrences in Nova Scotia it was necessary to compile available information into a single document. The effort provided a comparative base to evaluate occurrences in order to determine where additional investigation was required. In all, 125 occurrences were recorded ranging from laymen reports of white clays resembling diatomite to large lacustrine deposits detailed by assessment work. In addition, results from the Nova Scotia Department of Mines and Energy Peatland Inventory Program indicated fairly thick layers of ooze beneath the peat in several large deposits throughout the Province. A number of these deposits were investigated, and it was found that the material was organic rich sediment (gyttja) with very small amounts of poorly preserved diatoms.

Seventy-five occurrences were investigated for this report (Fig. 16), the majority of which were near established transportation routes. Most of the occurrences not investigated were too remote, already well documented or too small to be of commercial interest.

Methodology

After a literature review and data base compilation on recorded occurrences, the most significant deposits and occurrences were selected for sampling. Criteria for selection was based upon potential for future development, as determined by the extent of the reserves and the quality of the material reported to exist. Deposits that were worked in the past were also sampled in order to determine whether mineable reserves remain and provide a record of the quality of the material used in past markets.

In order to collect samples from the majority of occurrences associated with lacustrine environments, a 4.6 m fibreglass boat with a sampling well was used as a sampling platform. This boat was heavy which restricted sampling to lakes where road access was available. In instances where no roads were available, two 4.9 m canoes lashed together were used. A MacAulay sampler was used to collect bulk samples and a Hiller auger was used for reserve delineation and exploration (Fig. 17). The Hiller is thin and lightweight making it easier and quicker to

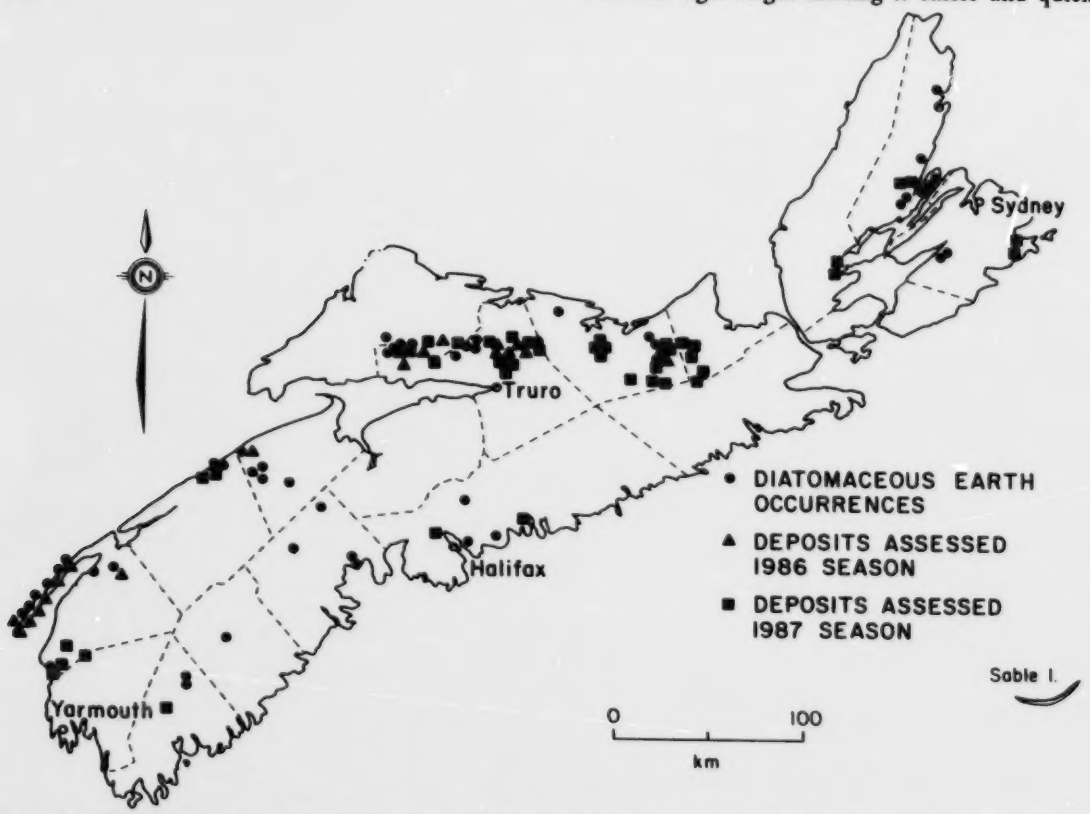

Figure 16. Diatomaceous earth occurrences evaluated in Nova Scotia in 1986-1987 by Nova Scotia Department of Mines and Energy personnel

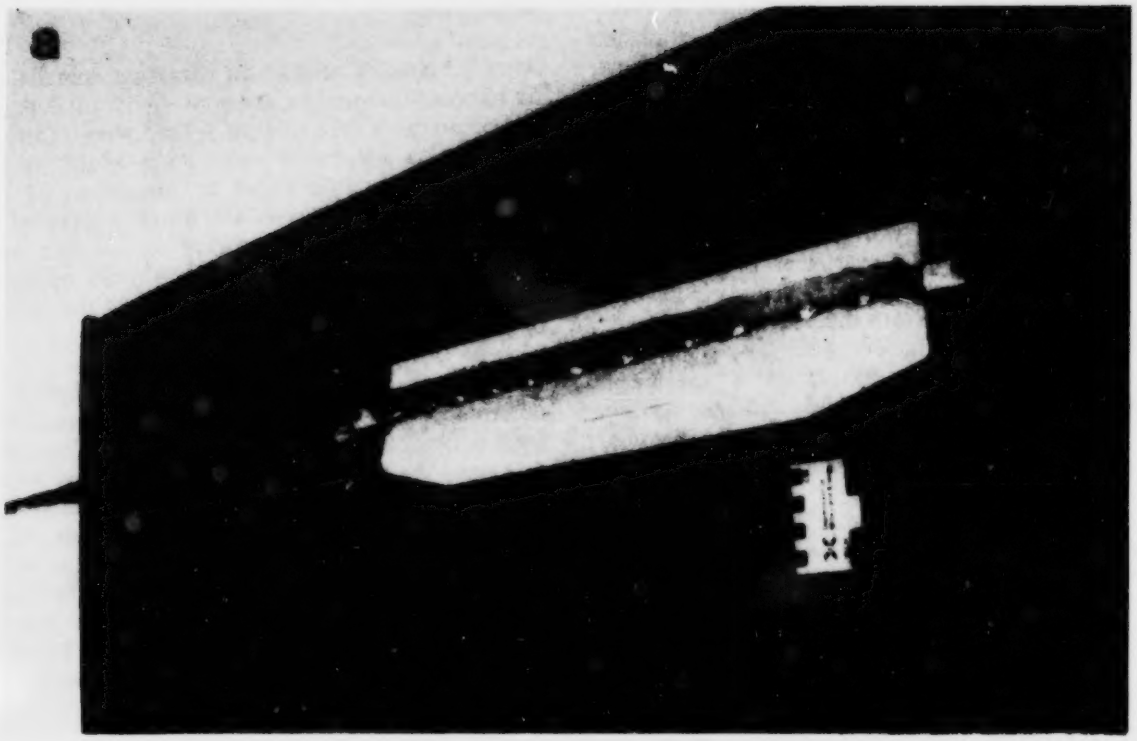

Figure 17a. The MacAulay sampler used to collect bulk samples.

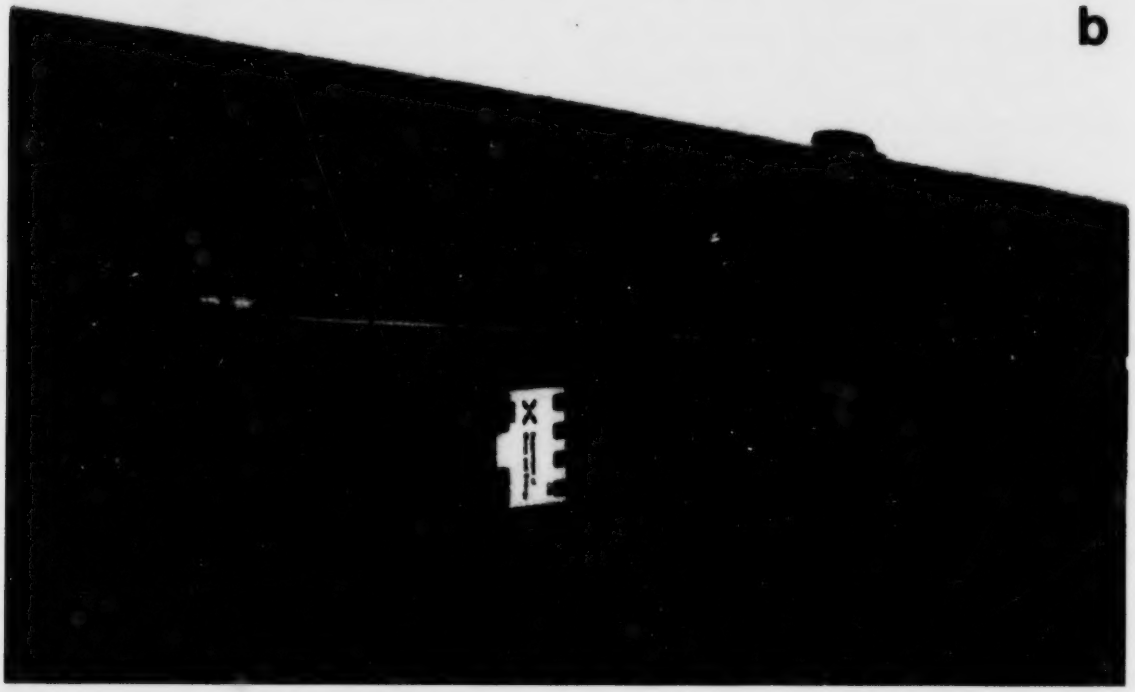

Figure 17b. The Hiller auger used to retrieve diatomaceous sediments.

use than the MacAulay sampler in preliminary evaluation of a deposit.

Samples were collected from representative sites over the deposits in order to provide a good base of information. Sampling began at the top of the sediment and continued down until either the bottom of the lacustrine sediments or rock was encountered or the auger could not be pushed further due to sediment density. In some cases water depth prevented reaching the sediment or the bottom of the sedimentary basin.

Analyses

Samples were subjectively separated based on physical appearance (colour, texture and organic content). The samples were placed in polyethylene bags for bulk density, per cent moisture, whole sediment and particle size analyses. From field data and sample analyses, potential reserves were estimated.

Bulk Density

Wet bulk density and per cent moisture were determined in the lab on an as received basis because repeatable measurements could not be determined in the field. It is anticipated that there would be a difference in the in situ and as received bulk density values, however, for the purposes of this report, the slight difference would not affect reserve estimations.

Whole Sediment Analysis

Each sample collected from the field was dried and a homogeneous subsample prepared. The samples were then submitted for standard whole sediment analysis. Results from this analysis are provided with the appropriate occurrences in this report.

Analyses include the percentage of silica (SiO_2), alumina (Al_2O_3), iron (Fe_2O_3) and alkali oxides (TiO_2, MgO, MnO, CaO, NaO, K_2O, P_2O_5), total organics (CO_2^+) as well as loss on ignition (LOI) to determine the quality of the crude material. Pure diatomite has approximately 86-92% SiO_2, 3-4% alumina and 1-2% iron (Table 2). Loss on ignition (LOI) and CO_2^+ indicate the amount of material that would be driven off by sintering or calcining the crude material. Data from the whole sediment analysis were then calculated on the post ignition results to provide an estimate of finished or calcined product quality.

Particle Size Analysis

Particle size distribution was determined using the Malvern 260 Laser Diffraction Particle Size Analyzer. Small samples of sintered material (20 000 particles) were analyzed from homogeneous subsamples. Mean particle size and distribution ratios provide an indication of the character of the diatomite, suggesting its best potential use. The particle size results are available in graphic (histograms) and tabular forms. The histograms result from interpretation of tabular information from selected sites and specific layers of diatomite and are presented on the evaluation map sheets which are provided for the selected occurrences (indicated with an asterix). These are available in the Nova Scotia Department of Mines and Energy, Halifax Library as Open File Maps 90-001.

Estimating Reserves

The estimation of reserves of the more significant deposits is based on average sediment thickness over the extent of the deposit as determined from sampling data.

Volume of sediment is calculated then related to average as received bulk density to determine an estimate of tonnage of in situ crude material. Per cent moisture then provides an estimate of the amount of water that must be driven off to provide a dry presintered weight of material. Loss on ignition (LOI) values are employed to calculate reserves of dry finished product. Figures of in situ reserves are meant only for comparative purposes. Mineable reserves depend upon the efficiency of mining, drying and sintering prior to any classifying or refining. See Table 6 as an example.

DISCUSSION

Quality of Diatomaceous Earth Found in Nova Scotia

Physical Character

Occurrence of diatomaceous sediments is fairly ubiquitous in Nova Scotia, however the development of diatomaceous earth is not as common. For the purposes of this report, unless the diatomaceous component of the dry diatomaceous sediment exceeds 60%, it is not considered diatomite or diatomaceous earth, but rather organic ooze or gyttja.

The majority of diatomaceous earth occurrences found in Nova Scotia are comprised of a highly

organic (30-40% dry weight) mud or sediment. In a number of occurrences thin layers of a dense white clay like (when wet) diatomaceous earth (diatomite) can be found. When dried this material is chalk like, loosely compacted and often brilliant white to off white in colour. In a few cases this material covers extensive areas of the deposit or occurrence. For the purposes of this report, to be considered as potentially economic, the diatomaceous earth, if organic rich, should exceed 2 m and the dense white diatomaceous sediments should exceed 30-50 cm over large enough areas to provide a significant potential reserve.

Table 6. Example of calculation used for estimating reserves.

A deposit roughly 10 ha in size that would average 2 m in thickness would have about 22 600 t of dry finished product ready for processing, based on the following parameters:

average depth (D)	2.0 m
area (A)	10 ha
volume (V)	200 000 m^3 (A x D)
average bulk density (B)	1.040 g/cm^3
estimate of tonnage (Tw)	208 000 t (B x V)
@ 85% moisture content (M.C.)	31 200 t (0% M.C.) (Td)
dry tonnes (Td)	Td=Tw x (1-M.C./100)
loss on ignition (LOI)	27.5%
finished product (FP)	22 600 t (0% M.C.) (FP=Td x (1-LOI/100))

The diatom component of diatomaceous earth in Nova Scotia is composed mostly of the remains of pinnate species of many lacustrine genera such as *Pinnularia*, *Eunotia*, *Cymbella* and *Navicula*. Diversity is great and was not evaluated other than to gain a general impression. Diversity did not appear to vary from one occurrence to the next. What was noted was the amount of fragmented diatom remains within the samples analyzed. Fragmentation could have resulted mechanically or through dissolution of the diatoms at the time of deposition. In most cases fragments still retain the primary and secondary pore structures which give diatomite unique properties.

Results from particle size analysis showed that the sintered samples of diatomaceous earth had a median particle size of roughly 15 μm and that 90% of each sample was <48 μm in size and that 10% was <4 μm. The largest percentage (60-70%) of the particles in each sample was found to occur in the 10-50 μm range and, depending on individual samples, the ratio 10-25 μm/25-50 μm could be equal or skewed in either direction (Fig. 18).

Whole Sediment Analysis

Results from the analysis indicate that the organic rich diatomaceous earth, upon calcining, tends to have higher Al_2O_3 and Fe_2O_3 levels, possibly due to higher residual ash or Fe_2SO_4 compounds resulting from organic decomposition. Samples with high (3-7%) Al_2O_3 had markedly high levels of nondiatomaceous clasts or fine grit, clays or sediment included. Samples with high amounts of residual ash and clasts tend also to have higher specific gravities of 2.3 or greater.

It is necessary to carefully examine individual deposits to assess the applicable use of Nova Scotia diatomaceous earth. It has been found that specific

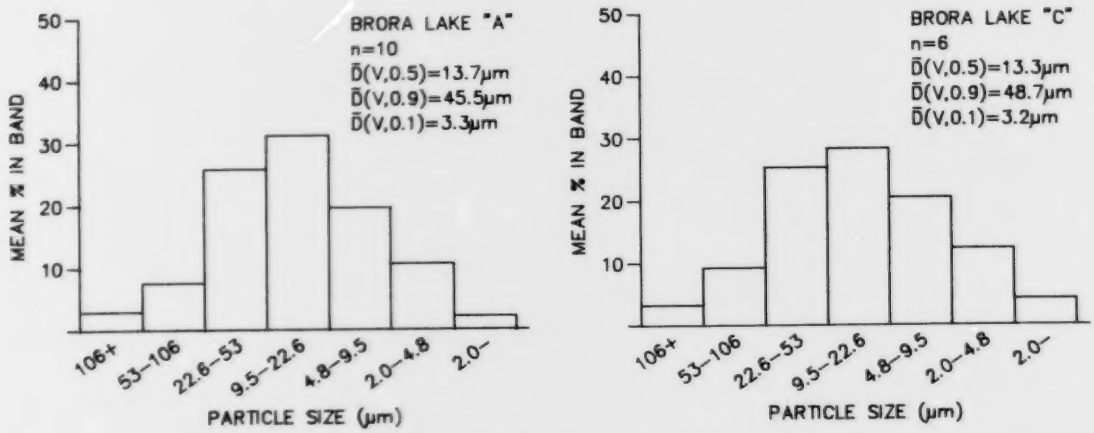

Figure 18. Particle size analysis histograms, Brora Lake, Pictou County

deposits of material are suited to limited specific uses, determined by the nature of the particles in the deposit. Levels of iron play a significant role in determining the use of the product by affecting its performance in various biochemical applications. Iron will combine with other materials to form complexes that may interfere with the final product. The major limiting factor that will determine the viability of any deposit is the refining costs necessary to produce a specific product.

Mining of Diatomaceous Earth from Wetland and Lacustrine Deposits

The extraction of diatomaceous earth from wetland and lacustrine deposits poses environmental and engineering problems which are significant to the economic potential of Nova Scotia resources. Deposit access, overburden removal, site drainage and product processing are problems which will have to be contended with when considering resource development.

Deposit Access

For large scale operations deposit access is not always a limiting factor, however, because of the small size of many deposits in Nova Scotia, road construction poses economic restrictions on their feasibility.

Overburden Removal

Many of the wetland diatomite deposits underlie 1-2 m of peat or organic overburden that is saturated with water. In cases where suitable reserves exist the overburden would simply be stripped off and discarded, however the material could also be marketed as a soil amendment. The dried diatomaceous peat was burned in batch kilns at Factory Bog (Little River) in the mid fifties to yield a calcined diatomite (Wightman, personal communication, 1986).

Site Drainage

In lacustrine deposits, where reserves are located beneath water, the feasibility of draining the deposit is dependent upon a number of physical factors, environmental regulations and social issues. These sites are often popular recreational areas.

Deposits occur generally in spring fed natural basins where it may be possible, in certain instances, to either isolate the working area of the deposit from its hydrological source using berms and pumps or deepen and widen existing channels to drop water levels over the diatomaceous sediments so that excavating equipment can be used to extract the crude material.

In areas where drainage would not be feasible wet mining techniques, slushing, slurry pumps and clam shells may be appropriate should the size of the deposit warrant the expense of such equipment. Diatomite extracted using this method has large amounts of excess water included which would have to be drained off prior to drying. Settling ponds or drainage slopes would have to be constructed in order to facilitate this process.

Product Processing

Depending upon the intended use of the finished product the amount of processing will vary from simple drying and crushing to more involved drying, calcining, crushing and separation processes as described earlier in this report.

The crude material from lacustrine deposits is water saturated mud (75-90% water). The quality of the mud is dependent on organic content and included contaminants of biological and geological origin. To crush the material, moisture content should be as low as possible. Solar drying can provide the least expensive method of drying, however it can be labour intensive and is subject to the climatic nuances of the region.

Calcining or sintering at a low temperature will be essential for most deposits to drive off residual moisture and high organic load. Early reports describe using rotary kilns and hardwood for calcining the crude material and suggest that roughly 20 million Btus of heat were required to produce 1 t of sintered crude (Wightman, personal communication, 1986). To obtain the equivalent energy would require roughly 570-600 l of fuel oil. Energy costs vary, however, assuming #2 oil can be purchased for $0.25 per litre, the cost to calcine 1 t of diatomite would be about $140-$150. Removal of 90% of the water through solar drying results in 50% moisture content of crude and would reduce the energy costs substantially.

Calcined diatomite, once cooled, would then be crushed and separated to meet specifications of the appropriate markets. Refining using cyclones and baghouses can be fairly expensive, however it is efficient.

CHAPTER 2.
DIATOMACEOUS EARTH DEPOSITS AND OCCURRENCES IN NOVA SCOTIA

INTRODUCTION

Chapter 2 lists evaluations of the significant diatomaceous earth or sediment occurrences throughout Nova Scotia. The grid locations given are approximate to assist the reader in locating reported occurrences. The occurrences (deposits) of diatomaceous earth or sediments are listed by the National Topographic System (NTS) map sheet number in which they occur (Fig. 19) in alpha-numeric order. Occurrences have been given a number (following the NTS number) in order to allow the reader to access analytical data from the Nova Scotia Department of Mines and Energy Diatomaceous Earth Database available through the Departmental Library, Halifax. Occurrence numbers which include an asterix (•) have accompanying detailed evaluation maps and diagrams, which are also available through the Nova Scotia Department of Mines and Energy Library, Halifax as Open File Maps 90-001.

For example: Occurrence 21A/02C - 1(•).
NTS
Database access number
additional maps and diagrams available

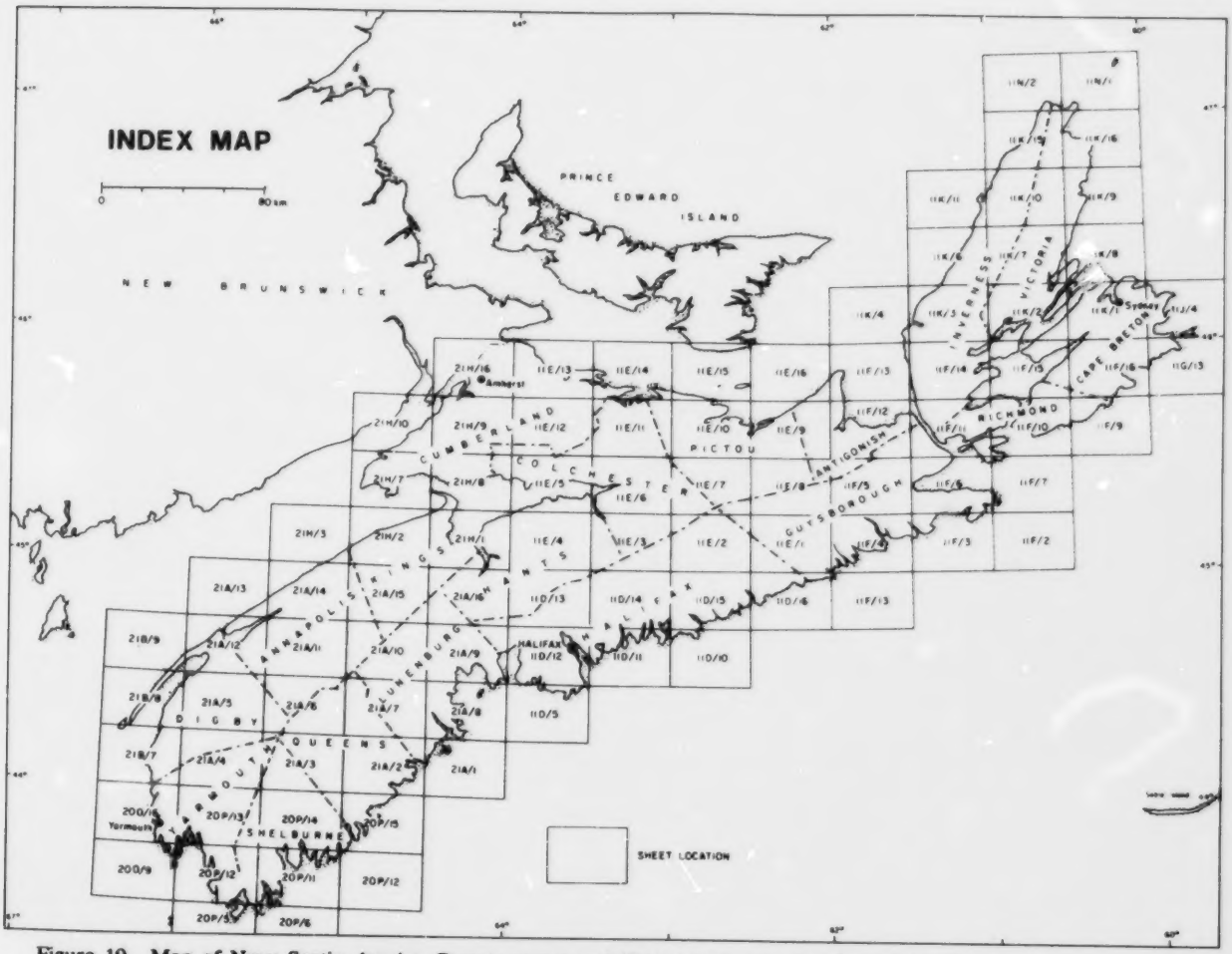

Figure 19. Map of Nova Scotia showing County names and National Topographic System (NTS) sheets

11D/11

OCCURRENCE 11D/11C 1
Caribou Lake, Halifax County

Location Tract 69 Claims CDEFMLNO
Grid Location uncertain

Caribou Lake is 2 km south of Highway 107, and 3 km west of Porters Lake. The location of the diatomite in the Lake was not reported (Eardley-Wilmot, 1928) (Fig. 20).

Assessment Occurrence was not investigated. Reported to have 60 cm of fairly pure diatomite under 90 cm of moss and peat covering 0.2 ha (Eardley-Wilmot, 1928).

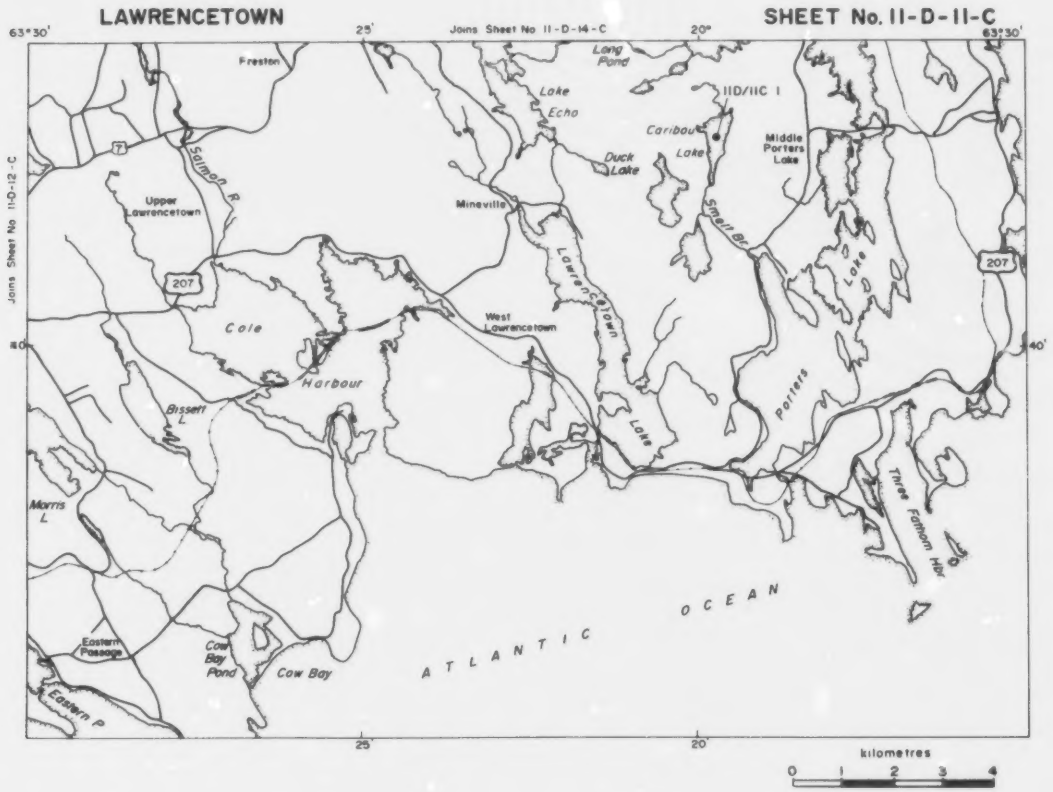

Figure 20. Location map for occurrence 11D/11C 1 (Lawrencetown)

11D/12

OCCURRENCE 11D/12D 1(•)
McQuade Lake, Halifax County

Location Tract 84 Claims EFML
Grid Location 63°44'52" 44°42'45"

McQuade Lake is about 0.5 km southwest of the Uplands Park subdivision. The diatomite occurs mainly beneath the peat at the northern end of the Lake (Fig. 21).

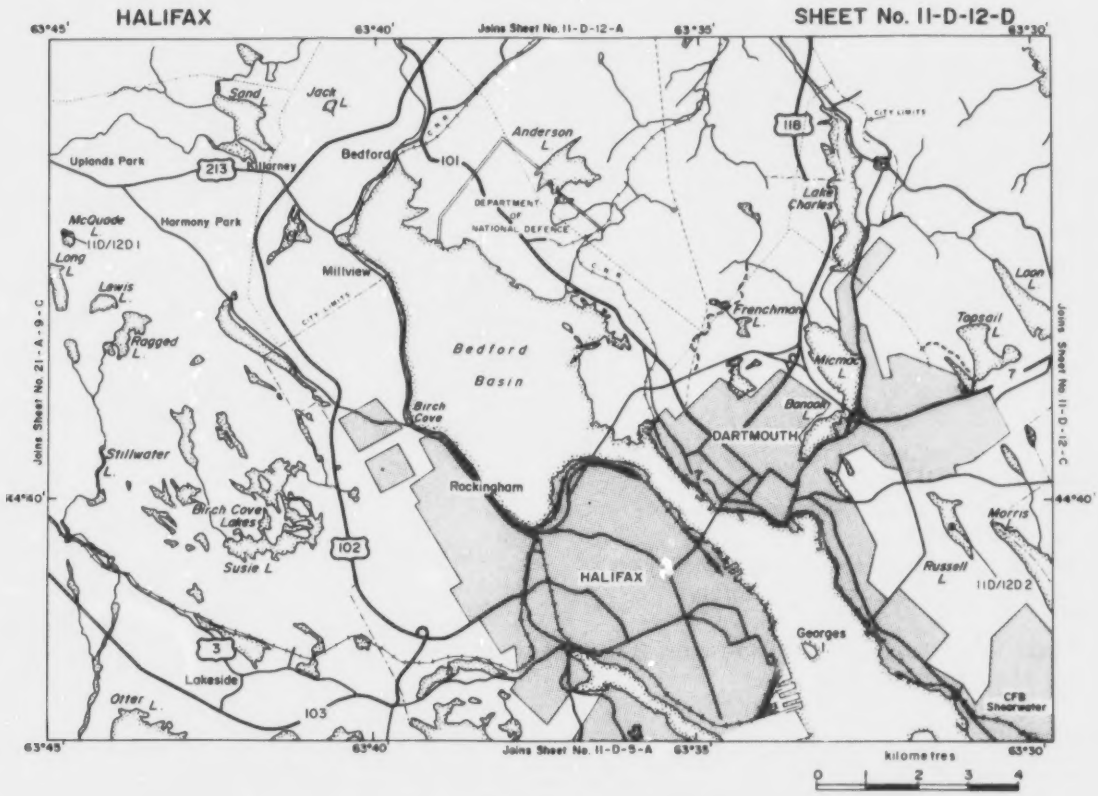

Figure 21. Location map for occurrences 11D/12D 1, 2 (Halifax)

Assessment Eardley-Wilmot (1928) reported grey diatomite at the bottom of McQuade Lake. The diatomite was reported to be high in alumina and iron and pockety over the Lake. Best grades were reported found in the southwestern end of the Lake (Eardley-Wilmot, 1928). McQuade Lake was once drained by T. R. Hyland and Mr. Normand in an attempt to mine the diatomite. No dates or results were reported. The diatomite was reported to burn to dark pink, and the diatoms were found to be badly broken (Eardley-Wilmot, 1928).

Analysis (per cent) (Eardley-Wilmot, 1928)

SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	H_2O	CO_2^+
74.55	9.76	2.84	-	-	11.1	1.74

1987 Program Results Recent evaluation of the diatomaceous material in McQuade Lake shows 30-40 cm of grey-white, firm diatomaceous earth underlying 30 cm of peat in the northern end of the Lake and marginal bog. The grey-white, firm diatomaceous earth is found almost entirely around the circumference of the Lake. Samples were collected from the northern edge of the Lake to determine the pozzalanic value of the diatomaceous earth. The dense, grey-white diatomaceous earth in the bog was found to cover an area of 0.25 ha equivalent to 980 t of in situ material (wet). When dried this is believed to be about 300 t in situ that could yield up 250 t in situ of sintered product.

Analysis (per cent) (1987)

SiO_2	Al_2O_3	Total Iron	Oxides	LOI
72.05	7.32	2.08	3.40	15.15

Specific Gravity	2.16
As Received Moisture (%)	67.71
As Received Bulk Density (g/cm^3)	1.30
Ash (%)	83.81

Ash Analysis (per cent)

SiO_2	Al_2O_3	Total Iron	Oxides
85.97	8.73	2.48	2.82

OCCURRENCE 11D/12D 2
Russell Lake, Halifax County

Location Tracts 26;47 Claims MJPQ;AB
Grid Location uncertain

Russell Lake is northeast of Canadian Forces Base Shearwater within the City of Dartmouth (Messervey, 1926; Ingall and McLeish, 1903) (Fig. 21).

Assessment Occurrence was not investigated. It was reported to be very thin and impure with patches of diatomite in various parts of Russell Lake close to the shore (Ingall and McLeish, 1903).

11D/13

OCCURRENCE 11D/13D 1
Sandy Cove, Halifax County

Location Tract 45 Claims CDEF
Grid Location uncertain

Exact location of occurrence is not available (Fig. 22).

Assessment Occurrence was not investigated and no exact location was provided (Messervey, 1926).

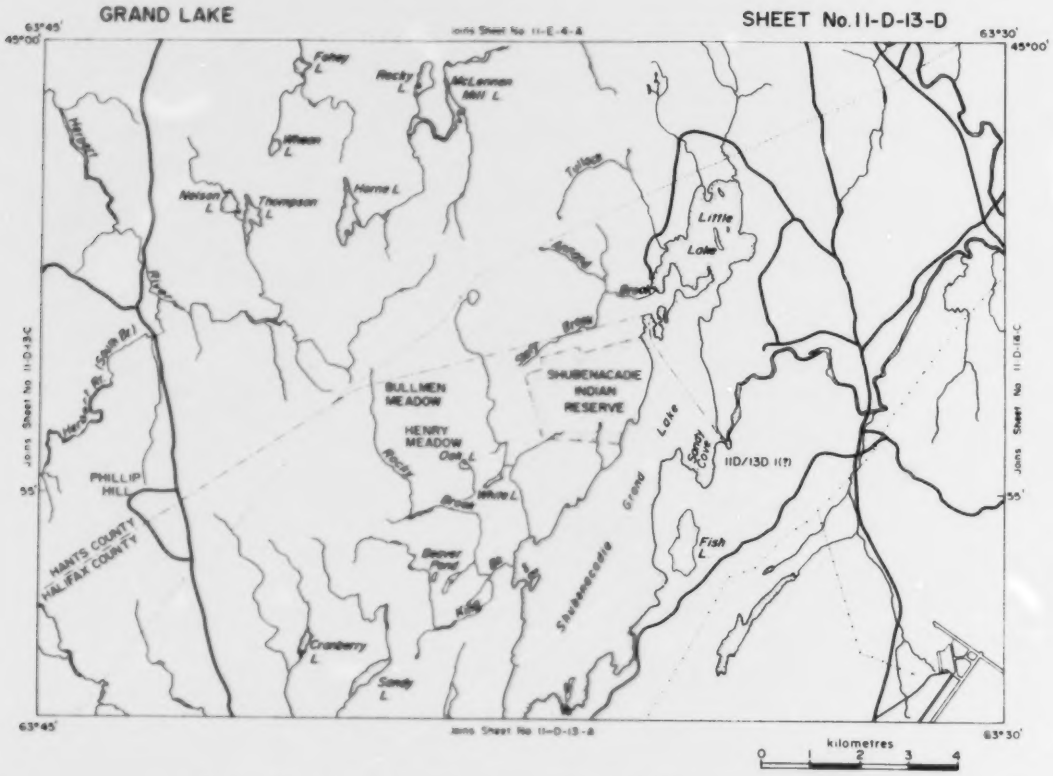

Figure 22. Location map for occurrence 11D/13D 1 (Grand Lake)

11D/14

OCCURRENCE 11D/14A 1(•)
Paint Lake, Halifax County

Location Tracts 13;36 Claims O;C
Grid Location 63°14'30" 44°46'34"

Paint Lake is adjacent to a woods road which runs 3.5 km north of Conrod Settlement between Conrod and Chezzetcook Lakes. Diatomaceous earth is found at the northeastern end of the Lake beneath about 1 m of water (Fig. 23).

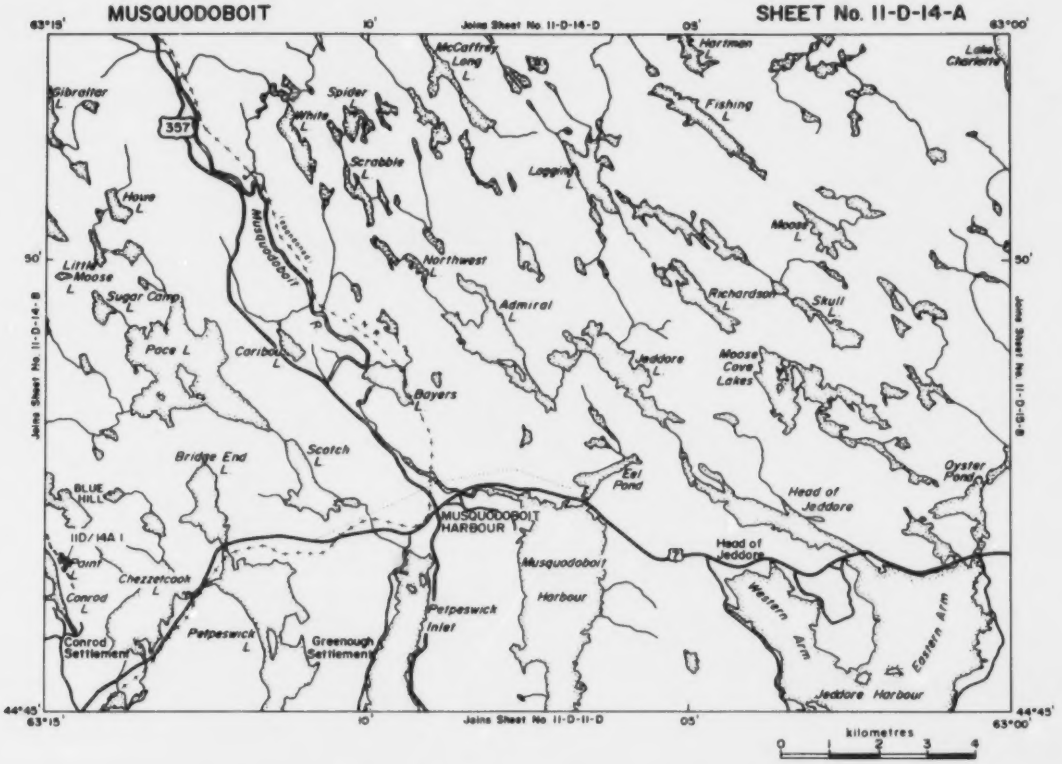

Figure 23. Location map for occurrence 11D/14A 1 (Musquodoboit)

Assessment Occurrence was once used for white washing barns (Eardley-Wilmot, 1928).

1987 Program Results Diatomaceous earth found in Paint Lake is highly stained with iron appearing orange or yellow. Some grey-white diatomaceous earth is found beneath, however it is only a few centimetres in thickness. The diatomaceous earth was found primarily within a few metres of the shoreline along the eastern side of the Lake. The diatomaceous earth varies in thickness and is interspersed between the boulders at the bottom of the Lake. The western side and northern end were found to have thick layers of peaty sediment.

Analysis (per cent) (1987)

SiO_2	Al_2O_3	Total Iron	Oxides	LOI
69.95	4.70	8.14	1.27	15.94

Specific Gravity	2.08
As Received Moisture (%)	75.00
As Received Bulk Density (g/cm^3)	1.23
Ash (%)	83.90

Ash Analysis (per cent)

SiO_2	Al_2O_3	Total Iron	Oxides
83.37	5.60	9.70	1.33

11E/05

OCCURRENCE 11E/05C 1
Economy Lake, Colchester County

Location Tract 91 Claims ABGHJKLP
Grid Location 63°51'22" 45°28'45"

Economy Lake is 8 km northwest of Upper Bass River (Fig. 24).

Assessment This site was not investigated because of the large size of Economy Lake and the reported size of the occurrence. The diatomite was reported to occur in very small quantities but be of good quality in various places on the bottom (Eardley-Wilmot, 1928).

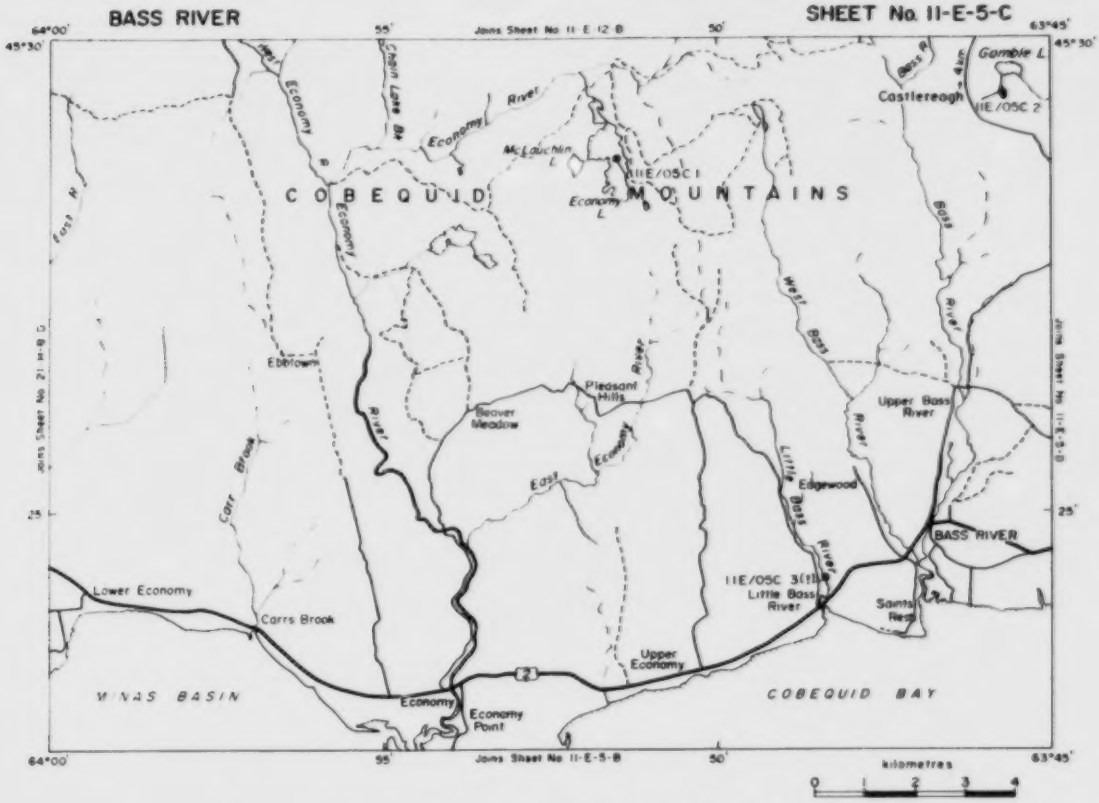

Figure 24. Location map for occurrences 11E/05C 1-3 (Bass River)

OCCURRENCE 11E/05C 2(•)
Gamble Lake, Colchester County

Location Tract 97 Claims FCKL
Grid Location 63°45'30" 45°29'30"

The occurrence is 8 km north of Upper Bass River and about 1 km east of the road which runs between Upper Bass River and Castlereagh (Fig. 24).

Assessment Pure white diatomite, 0.6-0.9 m thick, at the edge of the cranberry marshes at Gamble Lake was reported to be high in silica. The diatomite was believed to be of low quality spread over a large area (Eardley-Wilmot, 1928; Bancroft, 1945).

Analysis (per cent) (Eardley-Wilmot, 1928)

SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	H_2O	CO_2^+
80.1	4.00	1.00	0.39	0.73	-	12.8

11 species/37 varieties

1987 Program Results Further evaluation of this occurrence has shown an extensive coverage of solid white diatomaceous sediment underlying a 20 cm thick layer of peaty diatomaceous sediment in the pond just south of Gamble Lake. The diatomaceous sediment is grey to off white in colour and averages between 50 and 60 cm in thickness over an area of about 2 ha. The material can be found to extend from the eastern edge of Gamble Lake Pond to the western side beneath the peat, however it dissipates quickly towards the margins. It is estimated that there is approximately 10 000 m^3 of firm white diatomite in this Pond. The in situ tonnage of wet crude is estimated to be about 12 100 t. The dried weight of in situ material would equate to 4300 t. When the organics and volatile elements are removed, this would yield 3500 t of product in situ. The grade, accessibility and amount of material make this deposit one of the more attractive in the Province.

Analysis (per cent) (1987)

SiO_2	Al_2O_3	Total Iron	Oxides	LOI
77.50	3.07	0.70	2.46	16.27

Specific Gravity	1.98
As Received Moisture (%)	63.18
As Received Bulk Density (g/cm^3)	1.21
Ash (%)	83.20

Ash Analysis (per cent)

SiO_2	Al_2O_3	Total Iron	Oxides
93.72	3.72	0.86	1.70

OCCURRENCE 11E/05C 3
Little Bass River, Colchester County

Location Tract uncertain Claims
Grid Location

Exact location of this occurrence is unknown (Fig. 24).

Assessment The occurrence was reported to occur along the banks of Little Bass River (Nova Scotia Department of Mines and Energy, IMOD# 11E/05-07), however investigation failed to substantiate this claim.

11E/06

OCCURRENCE 11E/06D 1
Steele Run, Colchester County

Location Tract uncertain Claims
Grid Location

The location of this occurrence is uncertain. It is believed to be in the marshes near the intersection of Highway 4 and the Trans-Canada Highway 104 at Mt. Thom (Nova Scotia Department of Mines and Energy, IMOD# 11E/06-04) (Fig. 25).

Assessment Occurrence was not investigated.

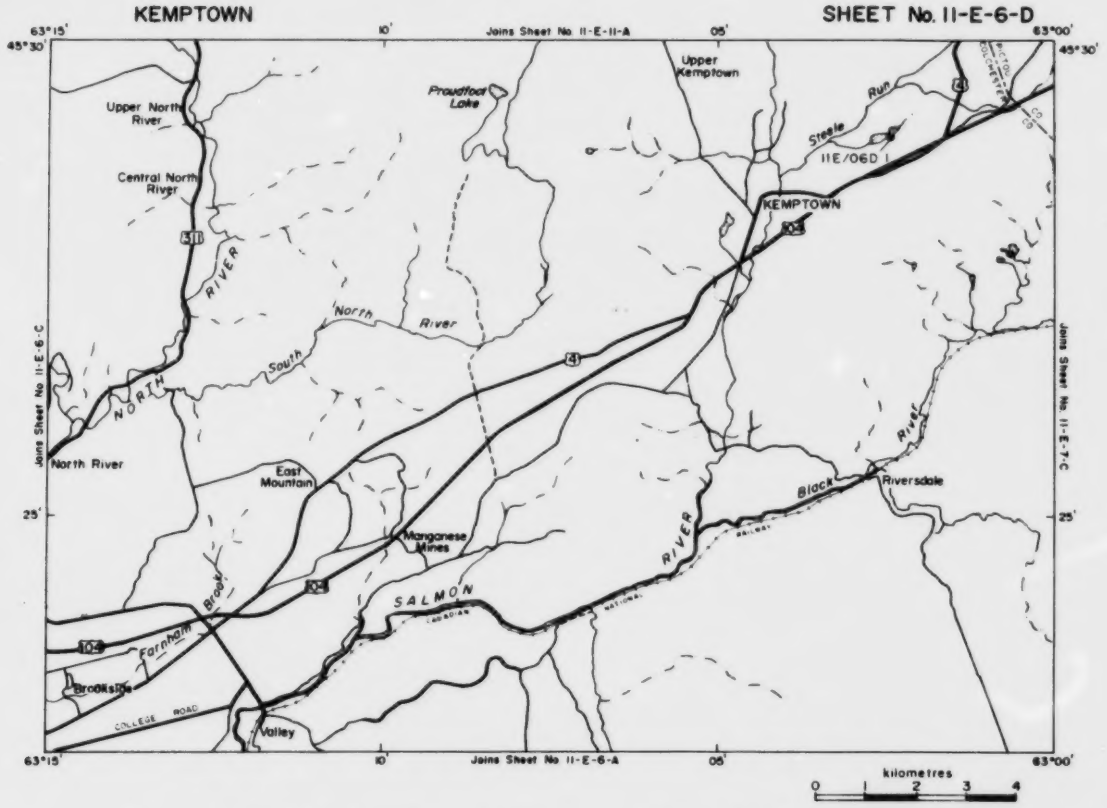

Figure 25. Location map for occurrence 11E/06D 1 (Kemptown)

11E/07

OCCURRENCE 11E/07C 1
Ben Lake, Colchester County

Location Tract 58 Claim C
Grid Location 62°57'00" 45°26'00"

Ben Lake is about 1.5 km south of Lansberg Siding and 3 km west of West River Station (Ingall and McLeish, 1903; Messervey, 1926; Nova Scotia Department of Mines and Energy, IMOD# 11E/07-08) (Fig. 26).

Assessment Site was not investigated. Ben Lake is small and marshy with little or no suitable access.

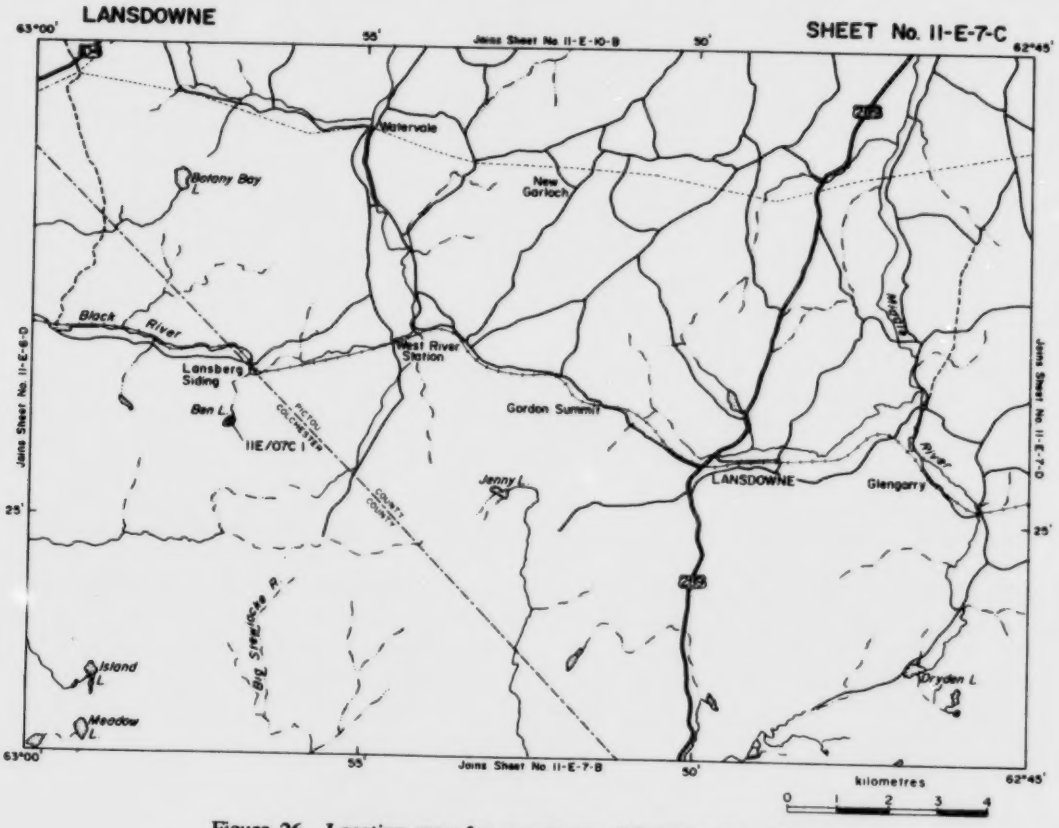

Figure 26. Location map for occurrence 11E/07C 1 (Lansdowne)

OCCURRENCE 11E/07D 2(•)
Calder Lake, Pictou County

Location Tracts 79;90 Claims OP;BC
Grid Location 62°37'50" 45°28'20"

Calder Lake is 2-3 km north of Springville and about 100 m west of the road from Springville to Churchville (Fig. 27).

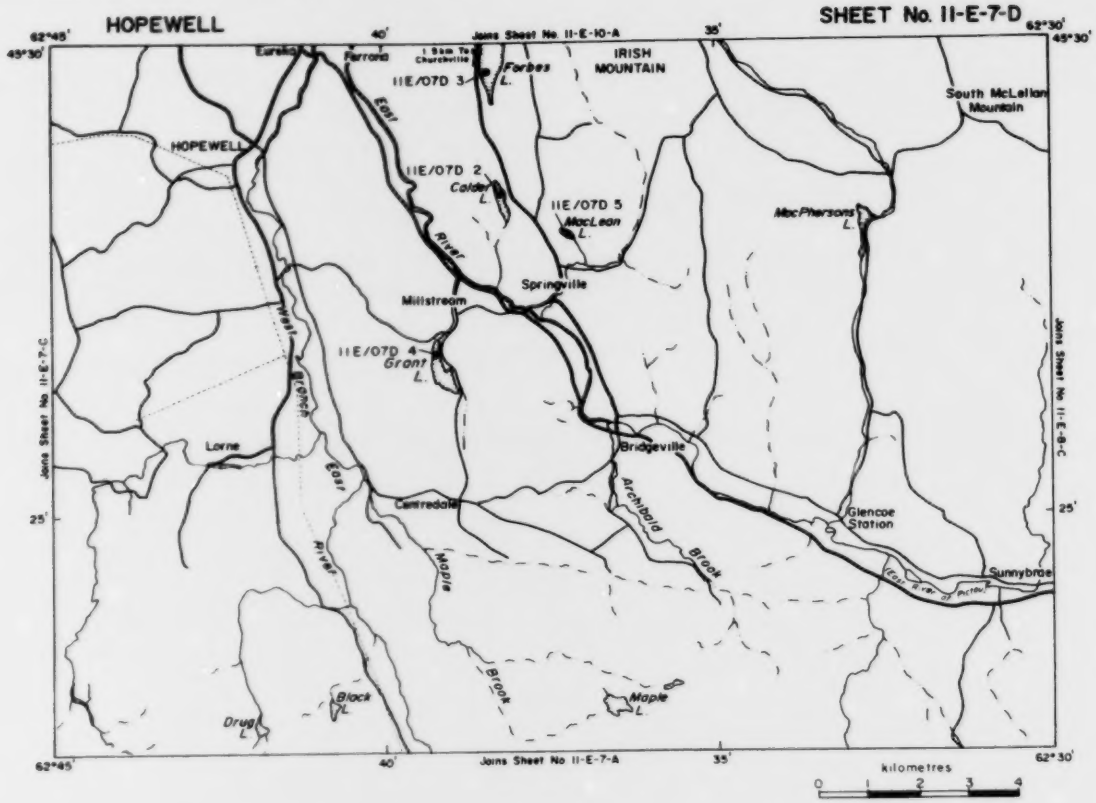

Figure 27. Location map for occurrences 11E/07D 2-5 (Hopewell)

Assessment A small occurrence was reported in the centre of Calder Lake (Eardley-Wilmot, 1928).

1987 Program Results Three sites were evaluated at this Lake in 1987. All three sites have 3-4 m thick layers of semiconsolidated organic sediment overlying clay, however little evidence of diatomite was noted. There are a number of homes now located on the eastern side of Calder Lake and the Lake is part of the New Glasgow area watershed limiting any possible development. The high alumina and ferrous content of the samples of sediment indicate nondiatomaceous sediment or gyttja.

Analysis (per cent) (1987)

SiO_2	Al_2O_3	Total Iron	Oxides	LOI
37.95	8.63	2.43	5.47	45.52

Specific Gravity	2.44
As Received Moisture (%)	88.38
As Received Bulk Density (g/cm^3)	1.10
Ash (%)	53.27

Ash Analysis (per cent)

SiO_2	Al_2O_3	Total Iron	Oxides
71.09	16.22	4.61	8.08

OCCURRENCE 11E/07D 3
Forbes Lake, Pictou County

Location Tract 103 Claims FLOP
Grid Location 62°38'25" 45°30'00"

Forbes Lake is south of Churchville on the eastern side of the road south to Springville (Fig. 27).

Assessment Site was not investigated. A small quantity of impure diatomite was reported (Eardley-Wilmot, 1928; Messervey, 1926; Ingall and McLeish, 1903). The area is currently used as a water supply for the New Glasgow region.

OCCURRENCE 11E/07D 4(*)
Grant Lake, Pictou County

Location Tracts 56;65 Claims JKLOPQ;B
Grid Location 62°39'15" 45°26'45"

The diatomite was reported to occur in the western side of Grant Lake at Millstream, about 5 km southeast of Hopewell (Fig. 27).

Assessment Muddy, somewhat gritty diatomite, 0.9-2.5 m thick, was reported to occur near the western side of Grant Lake and around the islands in the Lake. The occurrence was reported to be impure, and the Lake not easily drained (Eardley-Wilmot, 1928).

1987 Program Results The Lake level is currently maintained by a small dam. The investigation of Grant Lake found a small amount of low grade diatomaceous sediment near the island on the western side of the Lake. The material sampled in the remainder of the Lake was very high in alumina and iron suggesting gyttja, and not warranting further consideration. The occurrence is too small and impure to be considered economical.

Analysis (per cent) (1987)

SiO_2	Al_2O_3	Total Iron	Oxides	LOI
44.68	8.75	2.62	4.55	39.40

Specific Gravity	2.30
As Received Moisture (%)	84.25
As Received Bulk Density (g/cm^3)	1.11
Ash (%)	60.20

Ash Analysis (per cent)

SiO_2	Al_2O_3	Total Iron	Oxides
74.69	14.22	4.26	6.83

OCCURRENCE 11E/07D 5(•)
MacLean Lake, Pictou County

Location Tract 78 Claims LM
Grid Location 62°37'15" 45°28'00"

This small occurrence is found on the southern end of MacLean Lake which is in Springville (Messervey, 1926) (Fig. 27).

1987 Program Results MacLean Lake is a small, deep lake. Very little diatomaceous sediment was found. One site at the southern end provided 1 m of dark olive-green sediment (probably gyttja). A small amount of grey-white diatomite was found on the western edge of the southern end, however it was thin and scattered. Occurrence does not warrant further consideration.

Analysis (per cent) (1987)

SiO_2	Al_2O_3	Total Iron	Oxides	LOI
42.09	7.88	3.29	4.83	41.91

Specific Gravity	2.07
As Received Moisture (%)	86.15
As Received Bulk Density (g/cm^3)	1.10
Ash (%)	58.38

Ash Analysis (per cent)

SiO_2	Al_2O_3	Total Iron	Oxides
72.14	13.43	5.65	8.78

11E/08

OCCURRENCE 11E/08C 1(•)
Brora Lake, Pictou County

Location Tracts 95;98 Claims PQ;ABC
Grid Location 62°16'35" 45°29'10"

There is a diatomaceous earth occurrence at Brora Lake which is approximately 5 km southeast of Middle Barneys River and 0.5 km south of the road which runs through Middle Barneys River (Messervey, 1926; Ingall and McLeish, 1903) (Fig. 28).

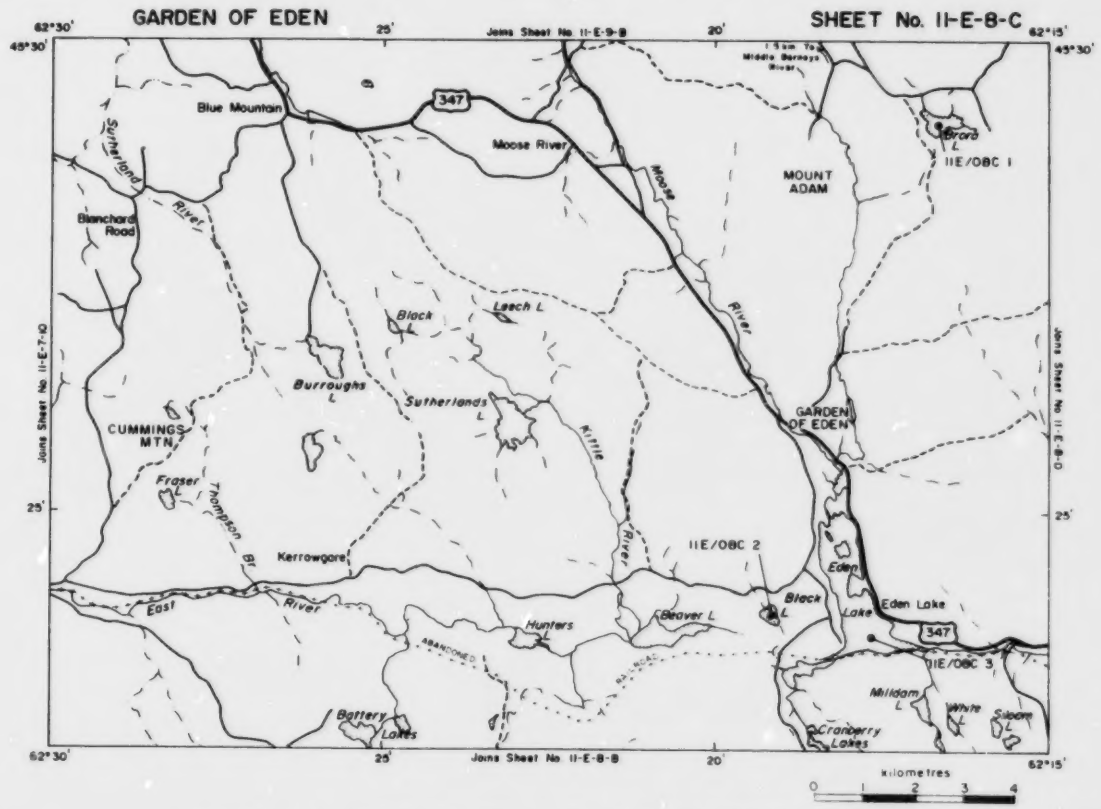

Figure 28. Location map for occurrences 11E/08C 1-3 (Garden of Eden)

Assessment This deposit was sampled in several locations and found to be variable in depth and quality. Thickness of diatomite varies from 0.9-4 m in deeper parts of Brora Lake to 60 cm in the shallower areas. The Lake is about 25 ha, of which 17 ha are covered with diatomite (Eardley-Wilmot, 1928).

Analysis (per cent) (Eardley-Wilmot, 1928)

SiO_2	Al_2O3	Fe_2O_3	CaO	MgO	H_2O	CO_2*	
82.0	2.82	1.10	0.5	0.37	-	12.16	dense white mud
76.6	3.20	2.50	0.5	0.37	-	15.90	diatomaceous mud
62.2	1.12	1.27	0.8	0.43	21.0	12.00	average grade

19 species/50 varieties

1986-87 Program Results Investigation of this deposit indicates a substantial amount of potential reserves of variable grade throughout the Lake. The southern portion of the Lake has a fairly thick layer (1-1.5 m) of off white to grey diatomaceous earth over an area of 2-3 ha. The central portion of the Lake has 1.5-4.0 m of soft brown, organic rich, diatomaceous sediment over an area of 12.5 ha or more. Estimated volume of the material is 330 000 m^3 of lower grade and 20 000 m^3 of white grade (total wet crude is approximately 383 700 t). Brora Lake has extensive in situ reserves of good grade diatomite and warrants further exploration for potential development.

Analysis (per cent) (1986-87)

SiO_2	Al_2O_3	Total Iron	Oxides	LOI	
67.11	2.81	1.64	1.80	26.05	(1986)
71.07	2.58	1.31	1.08	23.96	(1987)

	(1986)	(1987)
Specific Gravity	2.14	1.94
As Received Moisture (%)	78.39	78.12
As Received Bulk Density (g/cm^3)	1.09	1.20
Ash (%)	73.37	76.62

Ash Analysis (per cent)

SiO_2	Al_2O_3	Total Iron	Oxides	
91.47	3.83	2.24	1.45	(1986)
91.23	3.56	1.87	3.34	(1987)

OCCURRENCE 11E/08C 2
Black Lake, Pictou County

Location Tract 21 Claims KP
Grid Location 62°19'30" 45°23'45"

Black Lake is on the southwestern side of Eden Lake. Access is possible along the dirt road south from Garden of Eden which follows the western side of Eden Lake (Fig. 28).

Assessment This occurrence was reported to be of poor quality in a deep lake, far from transportation routes (Eardley-Wilmot, 1928). Site was investigated, but no significant amount of diatomaceous material was found. Occurrence was listed in Messervey (1926) and Ingall and McLeish (1903).

OCCURRENCE 11E/08C 3
Eden Lake, Pictou County

Location Tract uncertain Claims
Grid Location

Eden Lake is about 20 km south of New Glasgow on Route 347 (Fig. 28).

Assessment Scattered deposits of diatomite were reported at Eden Lake with the best occurring near the southern end of the Lake (Eardley-Wilmot, 1928). Occurrences were not found in the southern marshes. Eden Lake is too large to drain and the deposit is not commercial (Eardley-Wilmot, 1928). This area was investigated for this report, and no evidence of diatomite was found. Occurrence was listed in Messervey (1926) and Ingall and McLeish (1903).

OCCURRENCE 11E/08D 4
Black Brook Lake, Pictou County

Location Tract 57 Claims ABHJ
Grid Location 62°10'05" 45°26'05"

Black Brook Lake is 5 km north of Route 347 from East River St. Marys. Occurrences were reported to be scattered near the road which runs from East River St. Marys to Mayfield by Black Brook Lake (Fig. 29).

Assessment Eardley-Wilmot (1928) reported this occurrence to be a fairly large, low grade occurrence near the road. Black Brook Lake would be difficult to drain. The Lake was investigated in several locations, but no diatomite was found to occur in or around the Lake. Occurrence was listed in Messervey (1926) and Ingall and McLeish (1903).

OCCURRENCE 11E/08D 5(*)
Haggarts Lake, Pictou County

Location Tract 85 Claims GH
Grid Location 62°14'00" 45°28'40"

Haggarts Lake is 8 km northwest of Black Brook Lake, just east of the road which runs north from Greens Brook. Diatomite is found in the eastern portion of the Lake (Nova Scotia Department of Mines and Energy, IMOD# 11E/08-06) (Fig. 29).

1987 Program Results The diatomaceous earth is found to occur primarily along the southeastern part of Haggarts Lake in a shallow basin next to the shore, between the island reef and boat landing. The material is dense, white with heavy staining due to (possibly biogenic) impurities (testing for Cu and Ni proved negative) and iron. The diatomaceous earth is between 10 and 30 cm in thickness and covers an area of about 2.1 ha. It is estimated that there is about 11 200 m^3 of diatomaceous earth in situ. In situ tonnage of the wet crude is estimated to be 13 500 t or 3200 t dry crude. The in situ reserves of sintered crude are estimated to be 2850 t. Potential reserves are fairly accessible, however high iron levels in the crude material limit the quality of the product. Further investigations of this occurrence are not warranted.

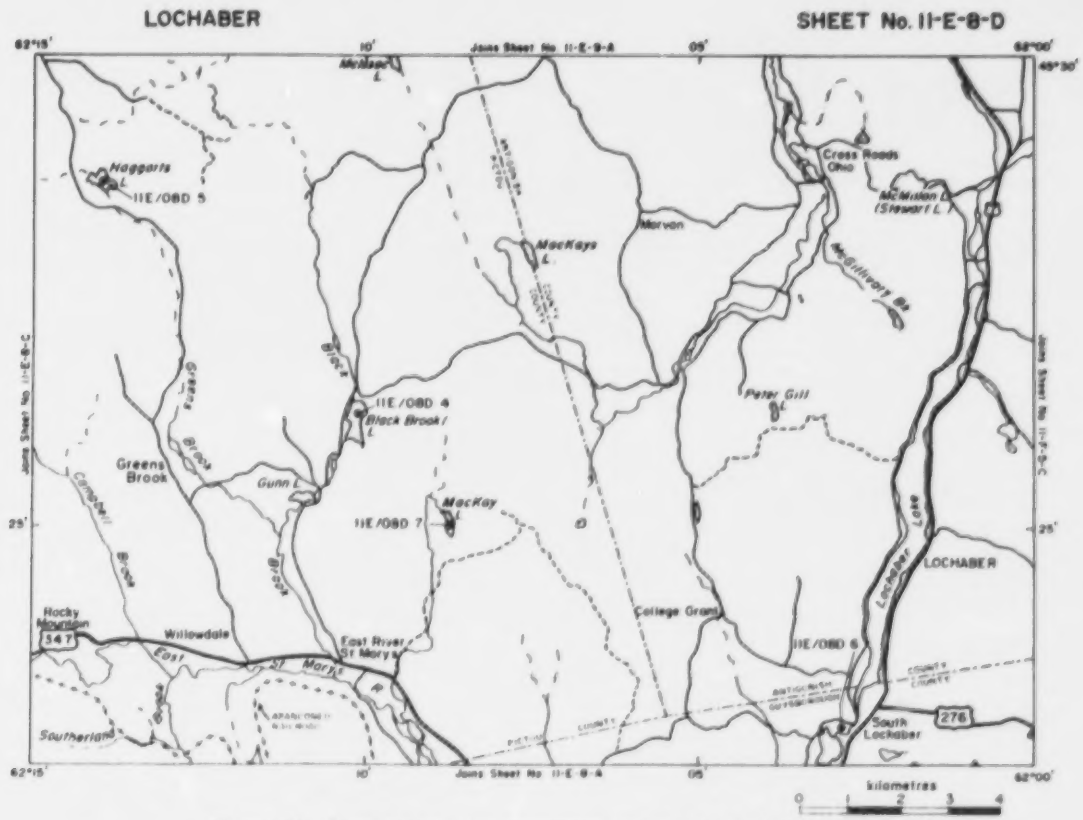

Figure 29. Location map for occurrences 11E/08D 4-7 (Lochaber)

Analysis (per cent) (1987)

SiO_2	Al_2O_3	Total Iron	Oxides	LOI
75.64	2.82	9.10	2.73	9.71

Specific Gravity	2.09
As Received Moisture (%)	76.45
As Received Bulk Density (g/cm^3)	1.21
Ash (%)	89.42

Ash Analysis (per cent)

SiO_2	Al_2O_3	Total Iron	Oxides
84.54	3.16	10.23	2.07

OCCURRENCE 11E/08D 6
Lochaber Lake, Guysborough County

Location Tract uncertain Claims
Grid Location

Lochaber Lake is a long, narrow lake about 30 km south of Antigonish on Route 7. The diatomite was reported to occur at the southern end of the Lake under bogs (Eardley-Wilmot, 1928) (Fig. 29).

Assessment Small occurrences are reported to have been found near the shores of Lochaber Lake, however the Lake is very large and could not be drained (Eardley-Wilmot, 1928). The bogs at the southern end of the Lake were investigated as well as the shallows at either end of the Lake, however no diatomite was found. The occurrence was not substantiated and does not warrant further investigation. Messervey (1926) and Ingall and McLeish (1903) listed Lochaber Lake as an occurrence.

OCCURRENCE 11E/08D 7
MacKay Lake, Pictou County

Location Tracts 31;42 Claims N;D
Grid Location 62°08'45" 45°25'00"

MacKay Lake is 3 km northeast of Route 347 from East River St. Marys and 2 km southeast of Black Brook Lake (Fig. 29).

Assessment Occurrence was not investigated. Ingall and McLeish (1903) and Messervey (1926) mentioned it as an occurrence. No further information is available in the literature.

11E/09

OCCURRENCE 11E/09A 1(•)
Camerons Lakes, Antigonish County

Location Tract 42 Claims JP
Grid Location 62°08'00" 45°33'05"

The Camerons Lakes are two small lakes in the vicinity of James River Station and Beaver Meadow. Diatomite was found in the southern most Lake at its western end (Eardley-Wilmot, 1928) (Fig. 30).

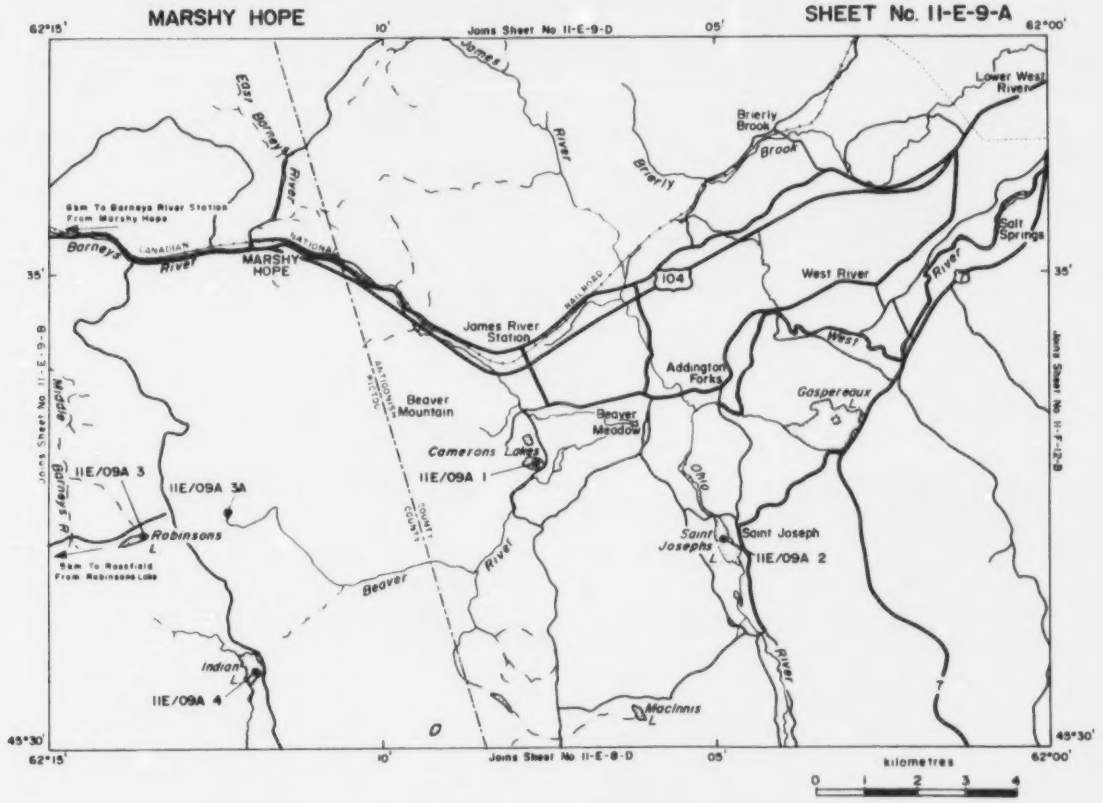

Figure 30. Location map for occurrences 11E/09A 1-4 (Marshy Hope)

Assessment The more northern of the Camerons Lakes was reported to be over 30.5 m deep (Fletcher and Faribault, 1893).

1987 Program Results The diatomite occurrence is small (<10-20 cm in thickness) and appears to be restricted to the western end of the southern most Camerons Lake (<0.25 ha). The remainder of the Lake is covered with 2-3 m of organic sediments. Occurrence does not warrant further consideration.

Analysis (per cent) (1987)

SiO_2	Al_2O_3	Total Iron	Oxides	LOI
48.68	5.07	1.91	4.12	40.22

Specific Gravity	1.83
As Received Moisture (%)	89.80
As Received Bulk Density (g/cm^3)	1.09
Ash (%)	59.29

Ash Analysis (per cent)

SiO_2	Al_2O_3	Total Iron	Oxides
82.79	8.04	3.21	5.96

OCCURRENCE 11E/09A 2
St. Josephs Lake, Antigonish County

Location Tract 28 Claims uncertain
Grid Location

The occurrence was reported 10 km south of Antigonish in St. Josephs Lake (Eardley-Wilmot, 1928) (Fig. 30).

1987 Program Results St. Josephs Lake is large with a substantial organic sediment layer (gyttja) throughout. No evidence of diatomite was found.

OCCURRENCE 11E/09A 3(*)
Robinsons Lake (Forbes Lake, local name), Pictou County

Location Tracts 35;36 Claims M;J
Grid Location 62°13'45" 45°32'15"

Robinsons Lake (Forbes Lake, local name) is 5 km southeast of Rossfield and 7 km southwest of Marshy Hope (Eardley-Wilmot, 1928; Fletcher and Faribault, 1893) (Fig. 30).

Assessment The literature indicates very little diatomite in Robinsons Lake, however, the stillwater pond and swamp 1.6 km east of the Lake were reported to contain over 6 m of diatomaceous ooze, not covered with water and warranting further investigation (Eardley-Wilmot, 1928).

Analysis (per cent) (Eardley-Wilmot, 1928)

SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	H_2O	CO_2*	
50.14	6.60	1.30	0.93	0.87	-	40.30	avg. ooze

1987 Program Results Recent investigations of Robinsons Lake have found it fairly shallow and weedy, underlain by a few metres of soft, grey diatomaceous earth. In some areas 60-90 cm of firm, grey diatomaceous earth have been found. The diatomaceous sediment covers 5.9 ha of Robinsons Lake beneath about 1.5-2.0 m of water. The diatomaceous sediment is of two grades, but is so widely dispersed that it is difficult to differentially extract the higher SiO_2 diatomaceous earth. The two grades consist of a dense, grey-white to tan diatomaceous earth which averages about 30 cm in thickness sporadically throughout the Lake, and a soft, medium to dark brown gyttja-like sediment which averages 2.2 m in thickness tapering steeply near the Lake margins. It is estimated that there is about 145 400 t of these two types of sediment in the Lake. In situ reserve calculations indicate

that there is 16 900 t of dry crude that would equate to 11 500 t of sintered material in situ. The recovery ratio from wet crude to dry product is low, and the Lake is large making this occurrence a poor prospect for development.

Analysis (per cent) (1987)

SiO_2	Al_2O_3	Total Iron	Oxides	LOI
62.48	2.47	1.42	2.87	30.61

Specific Gravity	1.99
As Received Moisture (%)	85.83
As Received Bulk Density (g/cm^3)	1.12
Ash (%)	68.49

Ash Analysis (per cent)

SiO_2	Al_2O_3	Total Iron	Oxides
90.82	3.74	2.20	3.05

OCCURRENCE 11E/09A 3A(•)
Beaver River (Findlays Meadows, local name), Pictou County

Location Tracts 34;35 Claims N;PQ
Grid Location 62°12'30" 45°33'00"

This occurrence is 2.5 km east of Robinsons Lake on the northern branch of Beaver River locally known as Findlays Meadows. Eardley-Wilmot (1928); Messervey (1926); and Ingall and McLeish (1903) listed this as an occurrence (Fig. 30).

1987 Program Results Investigation of the occurrence showed rather deep sediments that for the most part are composed of peat and related organic sediments. High levels of nonsiliceous constituents limit the value of this occurrence.

Analysis (per cent) (1987)

SiO_2	Al_2O_3	Total Iron	Oxides	LOI
45.57	4.57	2.59	6.03	41.24

Specific Gravity	2.15
As Received Moisture (%)	86.00
As Received Bulk Density (g/cm^3)	1.09
Ash (%)	58.16

Ash Analysis (per cent)

SiO_2	Al_2O_3	Total Iron	Oxides
81.37	8.09	4.49	6.05

OCCURRENCE 11E/09A 4(•)
Indian Lake, Pictou County

Location Tracts 10;15 Claims OP;C
Grid Location 62°12'15" 45°31'00"

Indian Lake is 9 km south of the Trans-Canada Highway 104 at Barneys River Station, just west of the road running south from Barneys River Station (Eardley-Wilmot, 1928) (Fig. 30).

1987 Program Results The site was investigated, however no diatomite was found although thick layers of organic gyttja were found to occur throughout Indian Lake. Several samples were collected to determine diatomite content. Occurrence does not warrant further investigation.

Analysis (per cent) (1987)

SiO_2	Al_2O_3	Total Iron	Oxides	LOI
53.64	6.82	6.14	5.67	27.73

Specific Gravity	2.28
As Received Moisture (%)	80.33
As Received Bulk Density (g/cm^3)	1.16
Ash (%)	71.48

Ash Analysis (per cent)

SiO_2	Al_2O_3	Total Iron	Oxides
75.65	9.24	8.36	6.75

OCCURRENCE 11E/09B 5
Rossfield, Pictou County

Location Tract 26 Claim N
Grid Location uncertain

This occurrence is in a small marsh (Cluness Marsh) in Rossfield (Eardley-Wilmot, 1928) (Fig. 31).

Assessment Site was not investigated. About 30 cm of good, white, somewhat gritty diatomite was reported to cover about 0.2 ha (Eardley-Wilmot, 1928).

Analysis (per cent) (Eardley-Wilmot, 1928)

SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	H_2O	CO_2*
74.9	2.65	1.3	0.55	0.52	-	19.36

6 species/17 varieties, mostly *Eunotia Major*

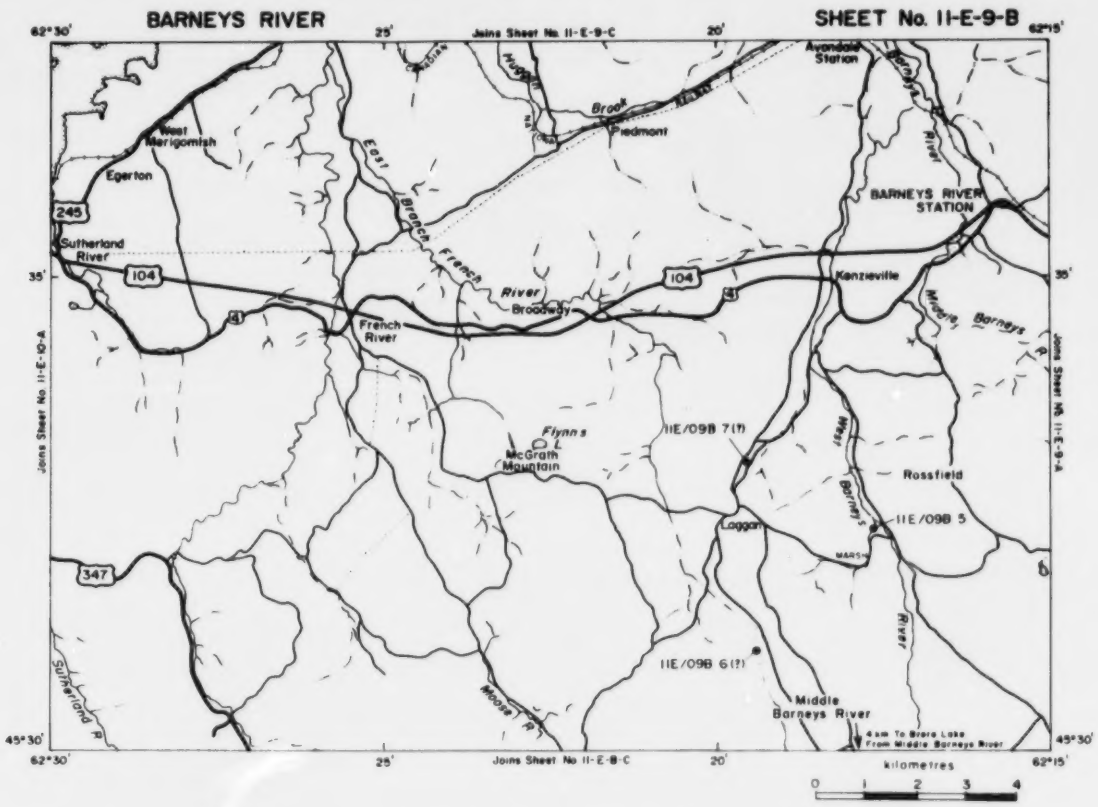

Figure 31. Location map for occurrences 11E/09B 5-7 (Barneys River)

OCCURRENCE 11E/09B 6

Middle Barneys River, Pictou County

Location Tract uncertain Claims
Grid Location

Occurrence was reported in the Johnsons Marshes which are believed to occur just north and east of Brora Lake near Middle Barneys River. No exact reference could be found detailing the location (Eardley-Wilmot, 1928) (Fig. 31).

Assessment Occurrence was not investigated. Fair grade, somewhat gritty diatomite, 60-90 cm thick, was reported over 0.2 ha of marsh (Eardley-Wilmot, 1928). A few tonnes were extracted, however no uses have been described, other than sample testing at the St. Lawrence Sugar Refinery, Dartmouth, Nova Scotia. The material was found to calcine to a pure white and contain well preserved diatoms (Eardley-Wilmot, 1928).

Analysis (per cent) (Eardley-Wilmot, 1928)

SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	H_2O	CO_2*
79.5	5.30	1.30	-	-	11.5	1.45

OCCURRENCE 11E/09B 7
Laggan, Pictou County

Location Tract 45 Claims uncertain
Grid Location

Location of this occurrence is not certain, but it is believed to occur 1 km north of Laggan on the edge of the East Branch French River (Eardley-Wilmot, 1928) (Fig. 31).

Assessment Occurrence was not investigated. Occurrence was described as 45 m wide and of undetermined length just beneath the sod. Some material has been extracted for use as a fertilizer carrier, although it was mixed with mud and silt (Eardley-Wilmot, 1928).

11E/10

OCCURRENCE 11E/10C 1
Toney Lake, Pictou County

Location Tract 84 Claims uncertain
Grid Location

The occurrence is in Toney Lake at the head of Toney River about 1 km west of Rogers near the Canadian National Railway Line (Messervey, 1926) (Fig. 32).

Assessment Occurrence was not investigated.

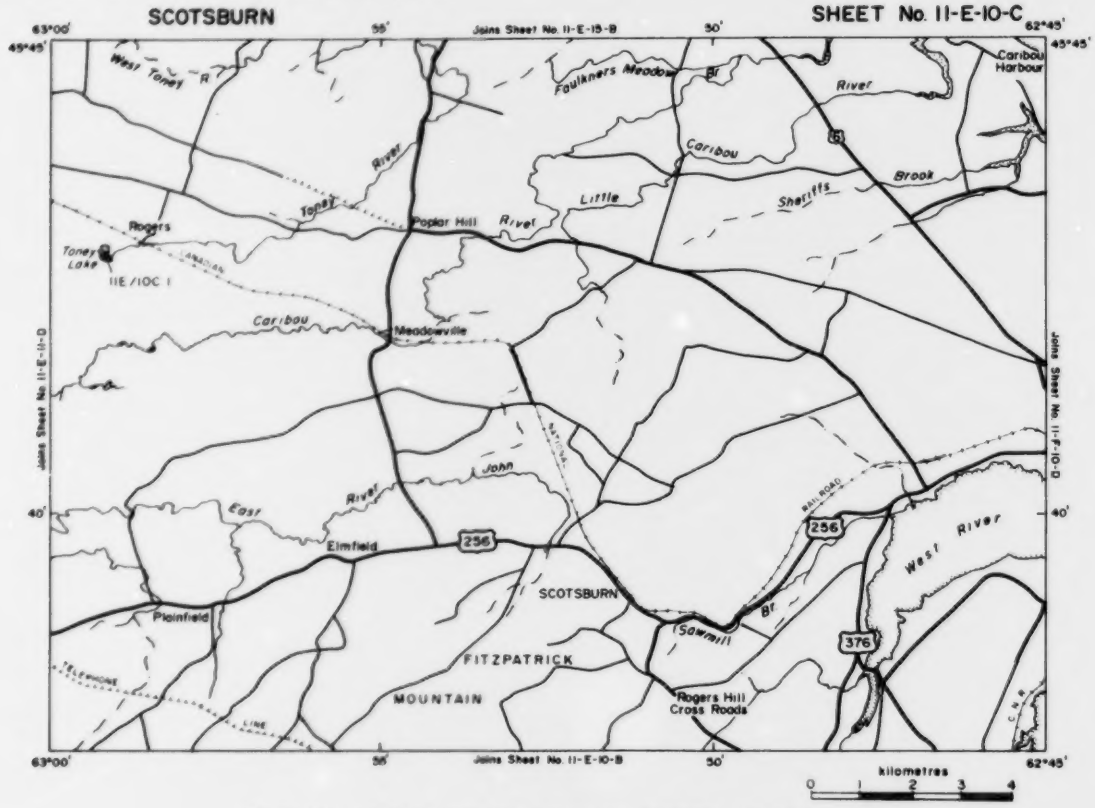

Figure 32. Location map for occurrence 11E/10C 1 (Scotsburn)

11E/11

OCCURRENCE 11E/11A 1(•)
Earltown Lake, Colchester County

Location Tract 55 Claims AB
Grid Location 63°07'30" 45°33'10"

Earltown Lake is on the northeastern side of the road from Earltown to Kemptown about 1 km southeast of its intersection with Route 311 (Fig. 33).

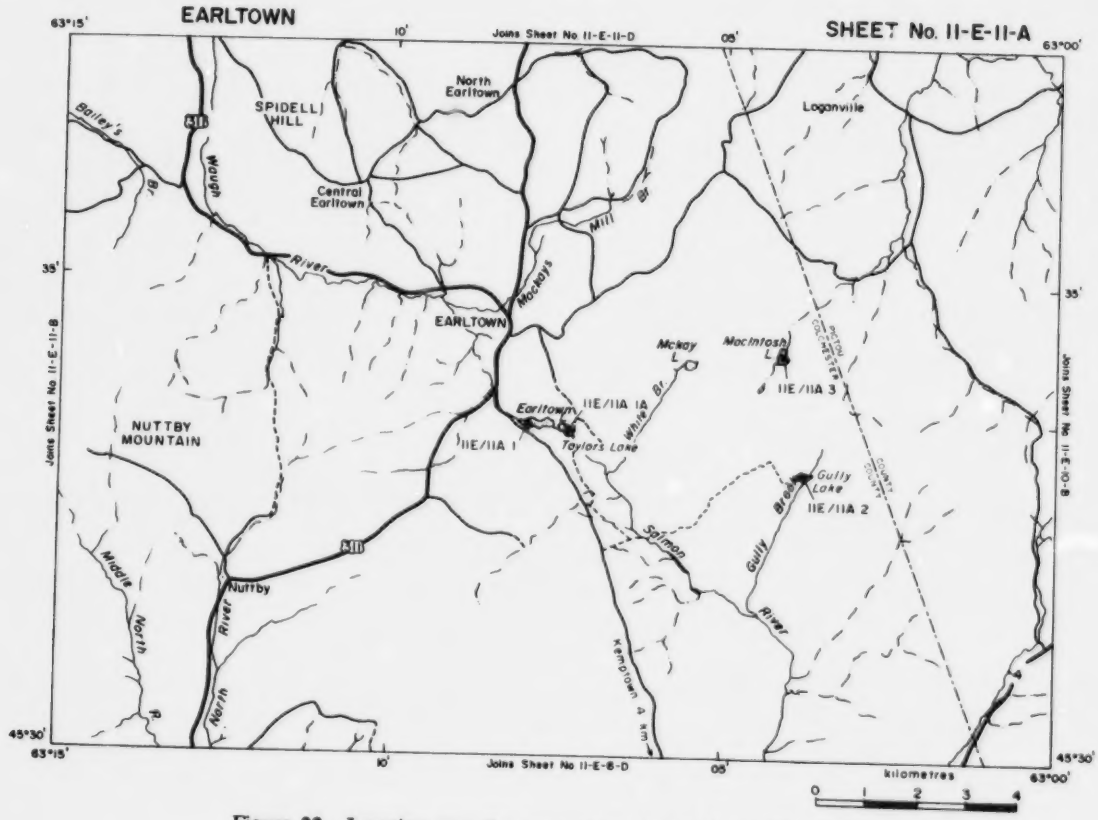

Figure 33. Location map for occurrences 11E/11A 1-3 (Earltown)

Assessment Occurrences were reported at the southeastern end of Earltown Lake (Eardley-Wilmot, 1928; Nova Scotia Department of Mines and Energy, IMOD# 11E/11-10). No diatomite was found near the shore, however there is reported to be 0.6 m of hard, white diatomite in some places and 3.7 m of soft, darker material in others (Eardley-Wilmot, 1928).

Analysis (per cent) (Eardley-Wilmot, 1928)

SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	H_2O	CO_2+
78.20	2.82	0.71	0.71	0.26	-	14.3

21 species/72 varieties

1987 Program Results Investigation of this occurrence did not find any hard, white diatomite, however several sites had up to 3 m of soft, greenish, semigelatinous gyttja.

Analysis (per cent) (1987)

SiO_2	Al_2O_3	Total Iron	Oxides	LOI
52.22	4.07	1.22	4.37	38.12

Specific Gravity	2.13
As Received Moisture (%)	88.30
As Received Bulk Density (g/cm^3)	1.23
Ash (%)	60.68

Ash Analysis (per cent)

SiO_2	Al_2O_3	Total Iron	Oxides
86.35	6.25	1.98	5.12

OCCURRENCE 11E/11A 1A
Taylors Lake, Colchester County

Location Tract 54 Claim D
Grid Location 63°07'28" 45°33'10"

The diatomite was reported to occur in the small swamp at the western end and northeastern corner of Taylors Lake, near Earltown Lake (Fig. 33).

Assessment It was reported that the swamp near the northeastern corner of Taylors Lake has about 0.2 ha of good quality, white diatomite 60 cm in thickness (Eardley-Wilmot, 1928).

Analysis (per cent) (Eardley-Wilmot, 1928)

SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	H_2O	CO_2+
73.74	6.90	0.78	0.66	0.55	-	14.30

21 species/72 varieties

1987 Program Results A small pond to the north of Taylors Lake was sampled to determine the extent of sediment and whether it is diatomite. The pond is easily reached and easy to drain. The diatomaceous sediment reaches 4-5 m in depth over an area of 1.5 ha. Average depth is about 2 m indicating about 33 300 t of sediment in situ.

Analysis (per cent) (1987)

SiO_2	Al_2O_3	Total Iron	Oxides	LOI
64.20	3.48	0.82	3.36	28.14

Specific Gravity	1.76
As Received Moisture (%)	84.20
As Received Bulk Density (g/cm^3)	1.11
Ash (%)	70.50

Ash Analysis (per cent)

SiO_2	Al_2O_3	Total Iron	Oxides
91.06	4.94	1.16	2.84

OCCURRENCE 11E/11A 2
Gully Lake, Colchester County

Location Tract 45 Claim J
Grid Location 63°03'55" 45°33'00"

Occurrence was reported in a small lake 5 km east of Earltown Lake. Access is possible by a woods road which begins 6 km south of Earltown Lake on the road between Earltown and Kemptown (Messervey, 1926; Nova Scotia Department of Mines and Energy, IMOD# 11E/11-12) (Fig. 33).

Assessment Occurrence was not investigated.

OCCURRENCE 11E/11A 3
MacIntosh Lake, Colchester County

Location Tract 69 Claim B
Grid Location 63°04'00" 45°34'15"

MacIntosh Lake is a small lake 3 km north of Gully Lake. An old road leads to the Lake from the woods road to Gully Lake (Messervey, 1926; Nova Scotia Department of Mines and Energy, IMOD# 11E/11-08) (Fig. 33).

Assessment Occurrence was not investigated.

OCCURRENCE 11E/11B 4
Big Totten Lake, Colchester County

Location Tract 35 Claim D
Grid Location 63°28'50" 45°32'00"

This occurrence is 2.5 km west of the bridge on a woods road that runs north from Belmont over the Debert River, and 15 km north of Belmont (Eardley-Wilmot, 1928) (Fig. 34).

Assessment Occurrence was not investigated. It was reported to be 0.3-0.6 m thick over an area of 2.4 ha of the 4.8 ha Lake. Diatomite was reported to be good quality, but Big Totten Lake would be difficult to drain (Eardley-Wilmot, 1928).

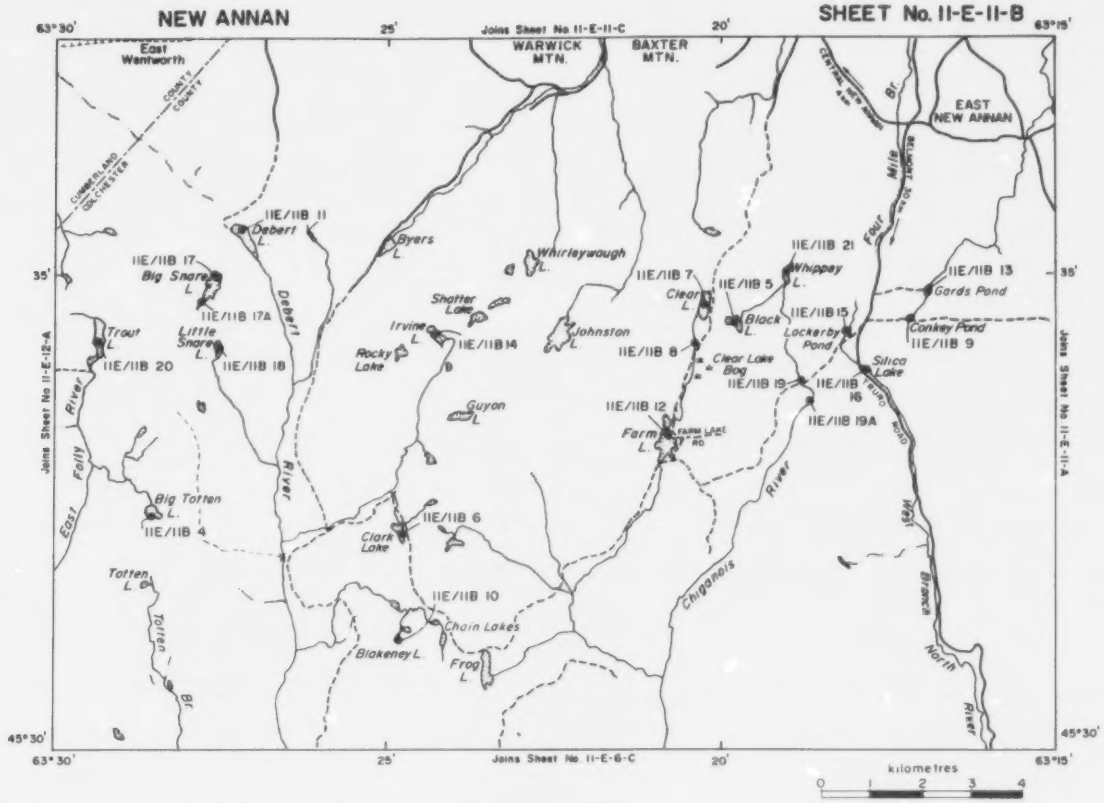

Figure 34. Location map for occurrences 11E/11B 4-21 (New Annan)

Analysis (per cent) (Eardley-Wilmot, 1928)

SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	H_2O	CO_2^+
69.66	8.44	1.90	0.72	0.73	-	16.44

12 species/38 varieties

OCCURRENCE 11E/11B 5

Black Lake, Colchester County

Location Tract 69 Claims EF
Grid Location 63°19'50" 45°34'30"

The occurrence was reported to be in Black Lake 1 km east of Clear Lake. Access using an all-terrain vehicle is possible from Clear Lake or from the Truro Road 2.5 km to the west (Eardley-Wilmot, 1928; Nova Scotia Department of Mines and Energy, IMOD# 11E/11-22; Bancroft, 1945) (Fig. 34).

Assessment Occurrence was not investigated, however Black Lake was reported to contain a small amount of good quality diatomite (Eardley-Wilmot, 1928). The material is soft and light brown in colour. Bancroft (1945)

extensively surveyed this deposit indicating a resource 3.8 ha in area divided into three lobes. There is estimated to be 64 000 m^3 of diatomaceous material in situ that may have as much as 12 300 t of dry sintered diatomite (Bancroft, 1945).

OCCURRENCE 11E/11B 6(•)
Clark Lake, Colchester County

Location Tract 32 Claims MN
Grid Location 63°24'50" 45°32'20"

This occurrence can be found by following pulp and forest access roads 13 km north of Belmont. Clark Lake is 2.3 km east of the Debert River (Eardley-Wilmot, 1934) (Fig. 34).

Assessment The diatomaceous earth was reported to consist of mostly fragments, and it was suggested that it may be suitable as an admixture to concrete or as an insulation and it would make a good filler (Eardley-Wilmot, 1934).

1987 Program Results Investigations into this occurrence confirm the presence of diatomaceous earth. The material was found to range in thickness from 30-140 cm, averaging nearly 70 cm over an area of 2.9 ha. It is estimated that there would be approximately 20 300 m^3 of material in situ. Beneath the grey-white diatomaceous sediment there is about 1 m of soft, brown organic (possibly diatomaceous) material. Based upon the analysis of collected samples, it is estimated that there is 7800 t of dry crude or 5900 t of sintered crude in situ.

Analysis (per cent) (1987)

SiO_2	Al_2O_3	Total Iron	Oxides	LOI
61.92	8.03	2.02	3.36	24.67

Specific Gravity	2.24
As Received Moisture (%)	69.80
As Received Bulk Density (g/cm^3)	1.27
Ash (%)	75.48

Ash Analysis (per cent)

SiO_2	Al_2O_3	Total Iron	Oxides
81.60	10.87	2.77	4.76

OCCURRENCE 11E/11B 7(•)
Clear Lake, Colchester County

Location Tract 68 Claims QJH
Grid Location 63°20'15" 45°34'40"

Clear Lake is approximately 6 km south of Central New Annan. Access to the Lake is by forest access road at the end of the road from Central to East New Annan (Fig. 34). This occurrence was reported in Messervey (1926), Eardley-Wilmot (1928), Bancroft (1945), and Nova Scotia Department of Mines and Energy (IMOD# 11E/11-17).

Assessment Bancroft (1945) reported that 6.6 ha of Clear Lake were covered with diatomite and estimated 68 000 m^3 of diatomaceous material that could yield 1070 t of dry finished product.

Analysis (per cent) (Eardley-Wilmot, 1928)

SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	H_2O	CO_2*	
79.30	3.68	0.78	0.44	0.41	-	13.74	average grade
82.50	3.22	0.78	0.50	0.37	-	11.76	white grade

16 species/36 varieties

1986 Program Results Investigation of Clear Lake indicates that the diatomaceous earth in this deposit varies in thickness and quality throughout the Lake. It was reported that there is an average of 0.6 m over 3.3 ha or one-third of the Lake (Bancroft, 1945). The central part of Clear Lake is fairly shallow and the eastern side tends to be deeper than the western. The deposit is primarily soft, grey, fairly dense diatomaceous earth, however in the southeastern and northeastern corners there is a substantial amount of hard, dense, white diatomaceous earth ranging from a few centimetres to 0.6 m in thickness (Bancroft, 1945). The diatomaceous earth averages 1.1 m in thickness (0.3-2.0 m) over 3 ha of the Lake bottom. This would indicate a potential for 33 000 m^3 of diatomaceous earth, however the rocky and uneven Lake bottom could lessen this substantially. The wet bulk density of the sediment is about 1040 kg/m^3 indicating 34 300 t of crude material. At 80% moisture there is an estimated 6900 t of dry crude in situ which upon sintering would yield about 4950 t of product. Clear Lake appears to be difficult to drain. The potential reserves are spread out in the Lake and the popularity of Clear Lake as a recreational area lessens the significance of the in situ reserves for potential development.

Analysis (per cent) (1986)

White Diatomaceous Earth

SiO_2	Al_2O_3	Total Iron	Oxides	LOI
83.06	2.54	2.32	2.03	8.70

Specific Gravity	2.24
As Received Moisture (%)	61.50
As Received Bulk Density (g/cm^3)	1.13
Ash (%)	89.95

Ash Analysis (per cent)

SiO_2	Al_2O_3	Total Iron	Oxides
92.34	2.82	2.58	2.26

Average Crude (per cent)

SiO_2	Al_2O_3	Total Iron	Oxides	LOI
64.27	3.14	2.34	2.15	27.05

Specific Gravity	2.24
As Received Moisture (%)	80.38
As Received Bulk Density (g/cm^3)	1.04
Ash (%)	71.90

Ash Analysis (per cent)

SiO_2	Al_2O_3	Total Iron	Oxides
89.38	4.37	3.26	2.99

OCCURRENCE 11E/11B 8
Clear Lake Bog, Colchester County

Location Tract 68 Claim B
Grid Location 63°20'16" 45°34'10"

The occurrence is approximately 1 km south of Clear Lake on the stream which leads southward from the Lake. Access is by foot or by all-terrain vehicle. The deposit is adjacent to an old sawmill (Nova Scotia Department of Mines and Energy, IMOD# 11E/11-11; Nova Scotia Department of Mines, 1942; 1944) (Fig. 34).

Assessment Occurrence was not investigated. This occurrence was reported to be roughly 2.2 ha in area under 60 cm of peat on the stream leading southward from Clear Lake. It is subject to seasonal flooding. The diatomite is grey brown which varies in thickness from 1-6.8 m. The volume of this deposit was reported to be 66 000 m^3 which indicates 12 800 t in situ of dry finished product (Bancroft, 1945).

OCCURRENCE 11E/11B 9(•)
Conkey Pond (local name), Colchester County

Location Tract 71 Claim F
Grid Location 63°16'55" 45°34'30"

This occurrence is 1.5 km east of the Truro Road, 6 km south of East New Annan, and about 0.5 km south of Gards Pond (Eardley-Wilmot, 1928; Nova Scotia Department of Mines and Energy, IMOD# 11E/11-19; Nova Scotia Department of Mines, 1942; 1944) (Fig. 34).

Assessment Early reports estimated the white diatomite in this site to cover 0.2 ha to a depth of 0.6-0.9 m (Bancroft, 1945).

1986-87 Program Results Recent investigation of this deposit shows that the diatomaceous earth covers most of Conkey Pond's bottom and extends well under the peat in the adjacent bog. The diatomaceous earth appears to have been partially mined from this deposit. Bucket trenches are still evident in the sediment. About 0.25-0.5 of the reserves of the deposit have been removed. It is estimated that the remaining material covers an area of 0.5 ha to a depth of 20-50 cm (17 500 m^3). This would equate to approximately 1800 t of wet crude material at 70% moisture. Upon drying there would be 810 t of dry natural diatomite. The diatomaceous earth is dense and white with little evidence of iron staining. The accessibility and high purity of the reserves make this deposit very attractive.

Analysis (per cent) (1986-87)

SiO_2	Al_2O_3	Total Iron	Oxides	LOI	
70.89	2.90	1.32	1.23	23.15	brown
88.90	1.23	0.39	2.30	7.18	white

	(brown)	(white)
Specific Gravity	2.12	1.93
As Received Moisture (%)	69.92	51.90
As Received Bulk Density (g/cm^3)	1.06	1.21
Ash (%)	76.37	91.84

Ash Analysis (per cent)

SiO_2	Al_2O_3	Total Iron Oxides		
92.83	3.80	1.73	1.63	(brown)
96.80	1.34	0.42	1.44	(white)

OCCURRENCE 11E/11B 10(*)
Chain Lakes, Colchester County

Location Tract 17 Claims EGKLMN
Grid Location 63°24'50" 45°31'20"

These ponds are found 2 km east of the Debert River, 1-2 km south of Clark Lake (Eardley-Wilmot, 1934) (Fig. 34).

Assessment These occurrences, on a tributary of the Debert River (Chain Lakes Brook), consist of five small ponds ranging from 0.8-2.4 ha in size. The diatomite was reported to be low grade (Eardley-Wilmot, 1934). Approximately 3600 t of the potential 29 000 t would have been marketable. The material is buff coloured, fairly dense and 0.9-1.2 m thick (Eardley-Wilmot, 1934). The ponds include Blakeney Lake, Island Lake and three small ponds.

1987 Program Results Investigation of Blakeney Lake, the largest of the ponds, showed that the northern part of this Lake has diatomaceous sediment 20-50 cm in thickness overlying dark brown to grey, peaty ooze or gyttja. The diatomite is dark grey to brown and fairly well consolidated. However, the extent of the potential reserves and the quality of the crude product does not warrant further consideration.

Analysis (per cent) (1987)

SiO_2	Al_2O_3	Total Iron	Oxides	LOI
67.42	5.82	1.37	2.12	23.27

Specific Gravity	2.37
As Received Moisture (%)	73.60
As Received Bulk Density (g/cm^3)	1.33
Ash (%)	77.17

Ash Analysis (per cent)

SiO_2	Al_2O_3	Total Iron	Oxides
87.37	7.54	1.78	3.31

OCCURRENCE 11E/11B 11
Debert Lake, Colchester County

Location Tract 82 Claims FLM
Grid Location 63°27'10" 45°35'25"

Debert Lake is 3.5 km south of the intersection of Route 246 with the Cumberland and Colchester Counties line. Access to the Lake is by woods road which runs 3.5 km south from Route 246 (Eardley-Wilmot, 1928; Nova Scotia Department of Mines and Energy, IMOD# 11E/11-18) (Fig. 34).

Assessment Occurrence was not investigated. A few metres of good diatomite were reported at the northern end of Debert Lake, however the Lake was reported to be quite deep and difficult to drain (Eardley-Wilmot, 1928; Nova Scotia Department of Mines and Energy, IMOD# 11E/11-18).

OCCURRENCE 11E/11B 12
Farm Lake, Colchester County

Location Tracts 44;53 Claims LNO;C
Grid Location 63°20'55" 45°33'10"

Farm Lake is 5.5 km west of the Truro Road and 3 km south of Clear Lake. Access is north 10 km from Belmont to the Farm Lake Road, then 4 km northeast to the Lake (Nova Scotia Department of Mines and Energy, IMOD# 11E/11-06) (Fig. 34).

Assessment Occurrence was not investigated. Diatomite was reported to be similar to Clear Lake, but the occurrence was said to be small and pockety (Eardley-Wilmot, 1928).

OCCURRENCE 11E/11B 13(*)
Gards Pond, Colchester County

Location Tract 71 Claims KP
Grid Location 63°16'50" 45°34'45"

Gards Pond is located 1 km east of the Truro Road, about 1.5 km northeast of Silica Lake (Nova Scotia Department of Mines and Energy, IMOD# 11E/11-05) (Fig. 34).

Assessment Gards Pond was one of the original sites occupied by the Oxford Tripoli Co. The deposit was estimated to have 5100 m^3 of diatomite (Bancroft, 1945). The Company produced 1000 t of dry finished product from this deposit during its operation in the early part of this Century. The diatomite was light brown in colour and up to 2.4 m in depth (Bancroft, 1945).

1986-87 Program Results Diatomite can still be found in Gards Pond, however it is very thin and iron stained. The remaining diatomaceous earth is located beneath the peat at the southern end of the pond. It is dark grey to white in colour. The diatomite is about 1 m or less in thickness over an area of 0.5 ha.

OCCURRENCE 11E/11B 14
Irvine Lake, Colchester County

Location Tract 65 Claims BF
Grid Location 63°24'15" 45°34'25"

Description of Irvine Lake location by Eardley-Wilmot (1928) is vague, but it is believed to be 2 km southeast of Byers Lake, 5 km south of Warwick Mountain, between Rocky and Shatter Lakes (Fig. 34).

Assessment Occurrence was not investigated. Occurrence is reported to be 0.1 ha in size ranging from 0.6-1.8 m in depth (Eardley-Wilmot, 1928).

OCCURRENCE 11E/11B 15(•)
Lockerby Pond (local name), Colchester County

Location Tract 70 Claim G
Grid Location 63°18'10" 45°34'20"

Lockerby Pond (local name) is one of the old Oxford Tripoli Co. sites. It is located on the western side of the Truro Road about 1 km north of Silica Lake and 4.5 km southwest of East New Annan (Eardley-Wilmot, 1928; Nova Scotia Department of Mines, 1942, 1944; Nova Scotia Department of Mines and Energy, IMOD# 11E/11-16) (Fig. 34).

Assessment Occurrence was not investigated. It was possibly mined out, because it was once part of the Oxford Tripoli Co. properties. The deposit was roughly 0.8 ha in area with an average of 2.4 m of light brown diatomite (Bancroft, 1945). About 0.2 ha of bog still remain on the northwestern corner of the deposit which may have accessible reserves. The pond is at the foot of a deep, steep sided ravine.

OCCURRENCE 11E/11B 16(•)
Silica Lake (Rhude Pond, historical name), Colchester County

Location Tract 51 Claims PQ
Grid Location 63°17'50" 45°34'00"

Silica Lake known in the literature as Rhude Pond is along the eastern side of the Truro Road, and 4.5 km south of East New Annan (Eardley-Wilmot, 1928; Nova Scotia Department of Mines, 1942, 1944; Nova Scotia Department of Mines and Energy, IMOD# 11E/11-21) (Fig. 34).

Assessment Silica Lake is the original operating site of the Oxford Tripoli Co. The deposit has been mined out. Silica Lake is about 1.2 ha in size and was reported to contain up to 5 m of grey-brown diatomite (Eardley-Wilmot, 1928; Bancroft, 1945).

Analysis (per cent) (Eardley-Wilmot, 1928)

SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	H_2O	CO_2⁺	
93.70	0.85	0.05	0.05	-	4.80	-	calcined grade

1986 Program Results Investigation of the site found thin layers of diatomaceous sediment throughout the Lake, however no significant amounts remain. Samples were collected from the Lake and a remnant pile of material along the shore of the Lake.

Analysis (per cent) (1986)

Crude Diatomaceous Earth

SiO_2	Al_2O_3	Total Iron	Oxides	LOI	
81.56	2.34	0.20	0.9	15.10	pure white
72.97	1.68	0.41	1.17	23.11	overall

	Pure White	Overall
Specific Gravity	1.98	1.98
As Received Moisture (%)	79.35	80.59
As Received Bulk Density (g/cm^3)	1.07	1.09
Ash (%)	85.00	76.20

Ash Analysis (per cent)

SiO_2	Al_2O_3	Total Iron	Oxides
93.93	2.78	0.92	2.37
95.76	2.20	0.53	1.47

OCCURRENCE 11E/11B 17(*)
Big Snare Lake, Colchester County

Location Tract 62 Claims JQ
Grid Location 63°27"30" 45°34'50"

The Lake is 1 km south of Debert Lake, and 2 km east of Trout Lake. Access to the Lake is through Sugarloaf Mountain road (Fig. 34).

Assessment Occurrence was not investigated. This occurrence was reported to be a large, shallow lake with low grade diatomaceous sediment (Eardley-Wilmot, 1928).

OCCURRENCE 11E/11B 17A
Big Snare Lake, Colchester County

Location Tracts 62;83 Claims P;B
Grid Location 63°28'00" 45°35'00"

The occurrence was reported in the bogs to the west and south of Big Snare Lake. The exact location is not provided in the reference material (Bancroft, 1945) (Fig. 34).

Assessment Occurrences were not investigated. They were reported in two small bogs roughly 3 ha in area with 0.6-1.5 m of black diatomaceous material beneath 1.2 m of decayed peat. The bogs were reported to contain 28 000 m^3 or 6000 t of dry finished product (Bancroft, 1945).

OCCURRENCE 11E/11B 18(*)
Little Snare Lake, Colchester County

Location Tracts 59;62 Claims Q;A
Grid Location 63°28'00" 45°35'00"

The Lake is 1 km south of Debert Lake, and 2 km east of Trout Lake. Access to the Lake is through the Byers Pond road (Eardley-Wilmot, 1928; Messervey, 1926; Bancroft, 1945; Nova Scotia Department of Mines and Energy, IMOD# 11E/11-09) (Fig. 34).

Assessment Occurrence was reported to be 1.5 ha in area and about 3 m deep, under 1.3 m of water. It was estimated that there were 8300 t of dry finished product (Eardley-Wilmot, 1928).

1987 Program Results Investigation of this occurrence indicated that there is 3 m of soft, yellow-grey sediment in the northern end of the Lake over an area of 0.5 ha. Toward the centre of the Lake the sediment is only 90 cm thick grading from grey white, light brown to dark grey brown at the bottom. In the cove at the southern end of the Lake the diatomaceous sediment appears gritty, soft, grey brown to a depth of 1 m. Water depth over the deposit is about 1.5 m throughout the Lake. The operation of a sawmill at the northern end of the Lake has resulted in the deposition of sawdust over the diatomaceous sediment in that portion of the Lake.

Analysis (per cent) (1987)

SiO_2	Al_2O_3	Total Iron	Oxides	LOI
71.74	6.80	1.02	1.22	19.22

Specific Gravity	2.01
As Received Moisture (%)	73.45
As Received Bulk Density (g/cm^3)	1.23
Ash (%)	80.92

Ash Analysis (per cent)

SiO_2	Al_2O_3	Total Iron	Oxides
88.67	8.39	1.26	1.68

OCCURRENCE 11E/11B 19(*)
Chiganois River (Stillwater Bog #1, local name), Colchester County

Location Tract 52 Claim J
Grid Location 63°18'55" 45°33'50"

The occurrence is beneath a bog, located 4.5 km south of East New Annan, 1 km west of Silica Lake, on the northern side of the pulp road leading to Farm Lake from the Truro Road (Nova Scotia Department of Mines, 1942; 1944; Nova Scotia Department of Mines and Energy, IMOD# 11E/11-13) (Fig. 34).

Assessment Deposit was reported to be approximately 2 ha in size underlain by an average of 2.4 m of light brown to black diatomite. Reported volume is 52 300 m^3 that could yield 10 000 t of dry finished product (Bancroft, 1945).

1986 Program Results Investigation of this occurrence found 3.5 m of diatomaceous sediment beneath 0.5 m of well humified peat. It is estimated that there may be 39 430 t of material in situ that has the potential of 5100 t of sintered diatomite.

Analysis (per cent) (1986)

SiO_2	Al_2O_3	Total Iron	Oxides	LOI
64.62	1.90	0.60	2.01	30.94

Specific Gravity	2.10
As Received Moisture (%)	80.94
As Received Bulk Density (g/cm^3)	1.05
Ash (%)	68.42

Ash Analysis (per cent)

SiO_2	Al_2O_3	Total Iron	Oxides
94.44	2.78	0.87	3.92

OCCURRENCE 11E/11B 19A(*)
Chiganois River (Stillwater Bog #2, local name), Colchester County

Location Tract 51 Claim E
Grid Location 63°18'45" 45°33'30"

The occurrence is beneath a bog, located 1 km southwest of Silica Lake, and 0.5 km downstream from the woods road which runs from the Truro Road to Farm Lake (Bancroft, 1945; Nova Scotia Department of Mines and Energy, IMOD# 11E/11-13) (Fig. 34).

1986 Program Results Investigation of this occurrence has found that the diatomaceous earth is 3.5 m thick beneath 1.5 m of well humified peat. The deposit is fairly small covering an area of 2.1 ha. This would indicate about 37 500 m^3 of diatomaceous sediment in situ that could yield approximately 3800 t of sintered crude.

Analysis (per cent) (1986)

SiO_2	Al_2O_3	Total Iron	Oxides	LOI
48.83	3.24	0.73	2.01	44.90

Specific Gravity	2.20
As Received Moisture (%)	81.78
As Received Bulk Density (g/cm^3)	1.01
Ash (%)	54.80

Ash Analysis (per cent)

SiO_2	Al_2O_3	Total Iron	Oxides
89.10	5.91	1.33	3.45

OCCURRENCE 11E/11B 20(•)
Trout Lake, Colchester County

Location Tracts 60;61 Claims OP;BG
Grid Location 63°29'20" 45°34'25"

Trout Lake is 5 km east of Folly Lake. Access is from a woods road leading from the Trans-Canada Highway 104 just north of Folly Lake past Hart Lake to the foot of Trout Lake (Eardley-Wilmot, 1928; Nova Scotia Department of Mines and Energy, IMOD# 11E/11-14) (Fig. 34).

Assessment The deposit was reported to be long and narrow; approximately 10 ha occupying the bottom of the 16 ha Lake. The shoreline is stony and generally free of diatomite, except for the northern end of the Lake. The diatomite was described as grey white to dark grey brown in colour and in places may be up to 6 m thick. Estimates of resources indicate 125 000 m^3 of dark coloured diatomite and 78 000 m^3 of the lighter material. This could yield up to 45 300 t of finished product. The diatomite calcines to a light pink and is quite free of lumps (Bancroft, 1945; Campbell, 1949).

Analysis (per cent) (Campbell, 1949)

SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	H_2O	CO_2^+
80.0	6.43	0.47	0.39	0.44	-	11.88
74.1	4.69	0.31	0.27	0.50	-	17.62
78.4	3.10	0.60	0.35	0.32	-	17.60
62.0	3.32	0.78	0.61	0.51	-	32.82

1986 Program Results Further investigation of the resources of this deposit indicate earlier references may have over estimated the available reserves. Twelve sites were sampled showing diatomaceous sediments ranging from 50 cm to 4.5 m in thickness. Average thickness from these sites is estimated to be 2.4 m over an area of 10.5 ha indicating approximately 250 300 m^3 of sediment that could yield about 265 300 t of wet crude diatomaceous earth. At 72.6% ash, there would be 36 600 t of dry finished product. The resulting diatomite was a soft white to pinkish white in colour.

Analysis (per cent) (1986)

SiO_2	Al_2O_3	Total Iron	Oxides	LOI
67.42	3.20	0.77	1.15	26.48

Specific Gravity	2.12
As Received Moisture (%)	81.21
As Received Bulk Density (g/cm^3)	1.06
Ash (%)	72.55

Ash Analysis (per cent)

SiO_2	Al_2O_3	Total Iron	Oxides
92.93	4.42	1.07	1.58

OCCURRENCE 11E/11B 21(•)
Whippey Lake, Colchester County

Location Tracts 69;76 Claims Q;A
Grid Location 63°19'00" 45°35'00"

This occurrence is 1.6 km west of the Truro Road, 2.6 km south of East New Annan and 1.3 km east of Clear Lake (Nova Scotia Department of Mines and Energy, IMOD# 11E/11-20) (Fig. 34).

Assessment The occurrence was reported to be about 1.8 ha in size, but only 12 cm thick (Bancroft, 1945). The diatomite is grey to white in colour beneath 1.8 m of water. It was estimated that there are 2255 m^3 of dry finished product in Whippey Lake (Bancroft, 1945).

1986 Program Results Investigation of the occurrence confirms the earlier reports on this site. Twelve sample locations throughout the Lake showed a maximum of 50 cm of white to grey-white diatomaceous sediment mainly free of iron staining. Some iron staining was noted at the southwestern corner of the Lake. The diatomaceous sediment was overlain by 10-20 cm of soft brown ooze or gyttja. On average 25 cm of diatomaceous sediment covers the Lake bottom (1.8 ha) indicating approximately 4550 m^3 of diatomite in situ.

OCCURRENCE 11E/11D 22
Welsford, Pictou County

Location Tract 74 Claims uncertain
Grid Location

The nature of this occurrence was not reported. Welsford is about 2.5 km south of River John along the road to West Branch River John (Fig. 35).

Assessment This occurrence was not investigated. It is listed as an occurrence by Nova Scotia Department of Mines and Energy (IMOD# 11E/11-15).

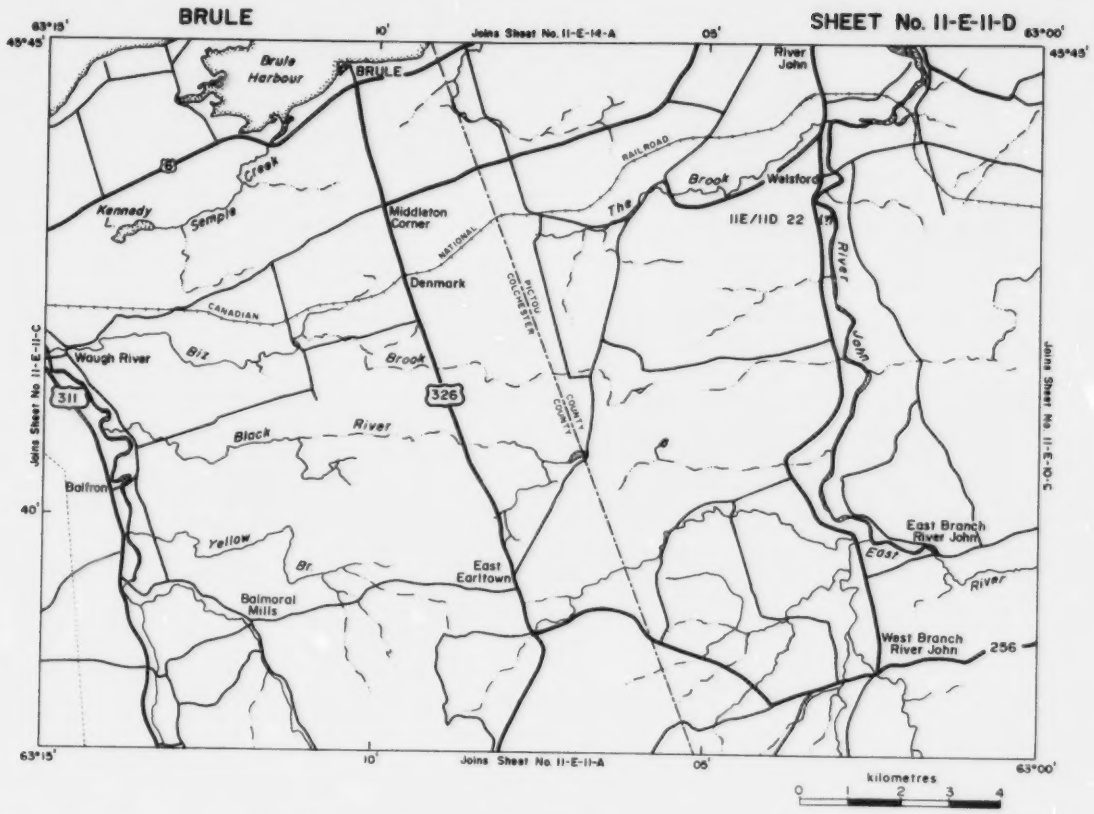

Figure 35. Location map for occurrence 11E/11D 22 (Brule)

11E/12

OCCURRENCE 11E/12A 1
Folly Lake, Colchester County

Location Tracts 27;28 Claims ABGHJKPQ;ABGH
Grid Location 63°32'30" 45°32'30

Folly Lake is located next to the Trans-Canada Highway 104, 30 km north of Truro (Fig. 36).

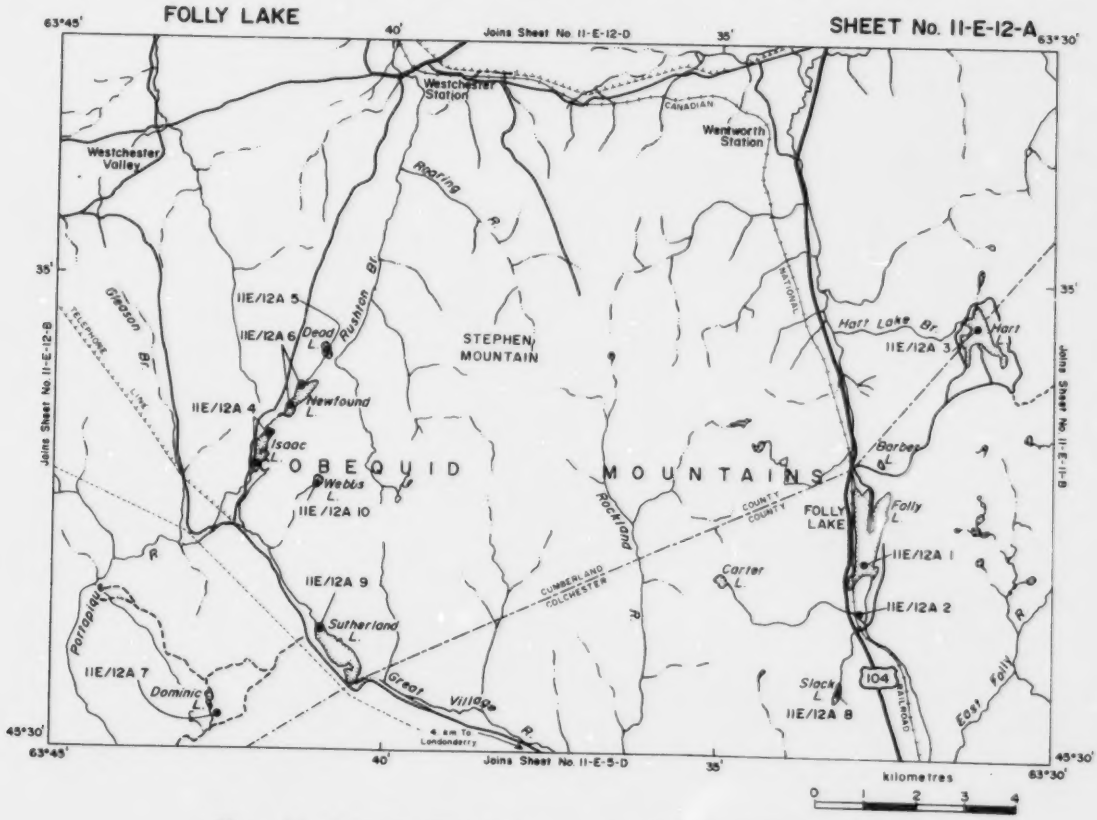

Figure 36. Location map for occurrences 11E/12A 1-10 (Folly Lake)

Assessment Occurrence was not investigated for this report. It was originally described by Ingall and McLeish (1903) as an 80 ha Lake of which two-thirds may be covered with diatomite. It was later assessed by Eardley-Wilmot (1928) who described the resource as pockety with areas 1.8-2.1 m thick with the best material in the southern end of the Lake. Bancroft (1945) reassessed the deposit and indicated a small bay on the southeastern end of the Lake as having the best material, but it is gritty and impure and when calcined it turns pink and forms small hard lumps. The deposit was worked at one time and the small amount of material removed was used as a polishing agent and insulation material (Eardley-Wilmot, 1928).

Folly Lake is currently a popular recreational area. A number of seasonal and permanent homes have been constructed. It is because of this and the large size of the Lake that it was not investigated.

Analysis (per cent) (Eardley-Wilmot, 1928)

SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	H_2O	CO_2^+	
64.9	10.51	2.69	0.60	1.61	11.01	7.69	average grade
71.80	10.92	0.78	0.82	0.76	-	14.84	best grade

15 species/61 varieties

OCCURRENCE 11E/12A 2
Folly Lake Meadows, Colchester County

Location Tract uncertain Claims
Grid Location

Occurrence was reported to be along the banks of the Folly River just below Folly Lake (Eardley-Wilmot, 1928; Nova Scotia Department of Mines and Energy, IMOD# 11E/12-08) (Fig. 36).

Assessment Occurrence was not investigated for this report. Eardley-Wilmot (1928) reported 30 cm of good, compact, white diatomite overlain by 15 cm of peat and other vegetable matter occurring for 6-9 m along Folly River.

Analysis (per cent) (Eardley-Wilmot, 1928)

SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	H_2O	CO_2^+
80.0	6.09	0.47	0.55	0.62	-	11.66

21 species/52 varieties

OCCURRENCE 11E/12A 3
Hart Lake, Colchester County

Location Tracts 71;72 Claims AH;CEFM
Grid Location 63°31'00" 45°34'30"

Hart Lake is 4 km northeast of Folly Lake with access from a forestry road which runs northeast from the Trans-Canada Highway 104 about 0.5 km north of Folly Lake (Nova Scotia Department of Mines and Energy, IMOD# 11E/12-06) (Fig. 36).

Assessment Occurrence was not investigated for this report. It was reported to be a small, shallow and impure deposit (Eardley-Wilmot, 1928; Nova Scotia Department of Mines and Energy, IMOD# 11E/12-06). Hart Lake is used extensively for recreational purposes. A large number of cottages are found along the shore.

OCCURRENCE 11E/12A 4(•)
Isaac Lake, Cumberland County

Location Tract 39 Claims KLOP
Grid Location 63°42'00" 45°33'10"

Isaac Lake is on the eastern side of the road from Londonderry to Westchester Station and 3 km northwest of Sutherland Lake (Eardley-Wilmot, 1928; Nova Scotia Department of Mines and Energy, IMOD# 11E/12-04) (Fig. 36).

1987 Program Results Diatomite was found in small amounts in both the northern and southern ends of Isaac Lake. Occurrences are shallow, gritty and overlain with peat in the northern end and under 1.8 m of water in the southern end. The Lake is deep and would not be practical to drain.

Analysis (per cent) (1987)

SiO_2	Al_2O_3	Total Iron	Oxides	LOI
80.04	2.65	1.76	3.64	11.91

Specific Gravity	2.23
As Received Moisture (%)	66.07
As Received Bulk Density (g/cm^3)	1.16
Ash (%)	87.30

Ash Analysis (per cent)

SiO_2	Al_2O_3	Total Iron	Oxides
91.69	3.04	2.02	3.25

OCCURRENCE 11E/12A 5
Dead Lake, Cumberland County

Location Tracts 64;57 Claims C;O
Grid Location 63°40'55" 45°34'20"

Dead Lake is 0.5 km east of the road between Westchester Station and Londonderry and 1 km north of Newfound Lake (Nova Scotia Department of Mines and Energy, IMOD# 11E/12-2) (Fig. 36).

Assessment Occurrence was not investigated. Dead Lake is approximately 5 ha in area, fairly shallow (1.2 m), with about 0.8 m of low grade diatomite. Grade was reported to be too poor to be of commercial value (Eardley-Wilmot, 1928).

OCCURRENCE 11E/12A 6(•)
Newfound Lake, Cumberland County

Location Tracts 58;59 Claims ME;AH
Grid Location 63°41'20" 45°33'20"

Newfound Lake is located about 7 km southwest of Westchester Station on the eastern side of the road between Westchester Station and Londonderry. It is 0.5 km north of Isaac Lake (Eardley-Wilmot, 1928; Nova Scotia Department of Mines and Energy, IMOD# 11E/12-04) (Fig. 36).

1987 Program Results Newfound Lake was investigated using 31 sites to determine the thickness and quality of the diatomaceous sediment in the deposit. The distribution of diatomaceous sediment was mainly in shallow basins between rock bars throughout the Lake or in the shallow area of the Lake between the rocky shoreline and the deeper water. No diatomite was found in the deeper portions of the Lake or on the rock bars. Approximately 6.2 ha of the Lake is covered by diatomaceous sediment averaging about 0.5 m in thickness indicating 29 500 m^3 of diatomaceous sediment. The diatomaceous sediment is found in the following four zones:

Zone A - the southern basin, south of the narrows
Zone B - the eastern shoreline of the main part of the Lake
Zone C - the northern basin, north of the bar at the northern end of the main Lake
Zone D - the western shoreline of the main part of the Lake

Zone A

Area of diatomite	2.42	ha
Average thickness	0.54	m
Average water depth	1.5	m
Estimated volume	13 070	m^3
Estimated in situ tonnage	15 500	t

The diatomaceous sediment in this area is primarily white to grey white (mottled) with some faint iron staining in the shallow areas. The material ranges from 0.2-1.5 m in thickness. The white diatomaceous sediment does not exceed 1 m in thickness and is usually underlain by varying amounts of softer, grey-brown sediment.

Analysis Zone A (per cent) (1987)

SiO_2	Al_2O_3	Total Iron	Oxides	LOI
83.41	2.05	1.97	1.60	10.97

Specific Gravity	2.03
As Received Moisture (%)	62.40
As Received Bulk Density (g/cm^3)	1.18
Ash (%)	89.01

Ash Analysis (per cent)

SiO_2	Al_2O_3	Total Iron	Oxides
93.70	2.31	2.20	1.79

Analyses Zone B (per cent)

Area of diatomite	1.49	ha
Average thickness	0.42	m
Average water depth	1.7	m
Estimated volume	6260	m^3

The diatomaceous sediment was found to occur within a long narrow band separating the rocky shoreline from the deeper portions of the Lake. Sediments were found to be dense and off white with intense iron staining.

Analyses Zone C (per cent)

Area of diatomite	1.05	ha
Average thickness	0.37	m
Average water depth	1.0	m
Estimated volume	3890	m^3

The diatomaceous sediment is off white and heavily iron stained averaging about 30 cm in thickness underlain by dark grey, amorphous sediment.

Analyses Zone D (per cent)

Area of diatomite	1.25	ha
Average thickness	0.50	m
Average water depth	1.7	m
Estimated volume	6250	m^3

The northern end of Zone D is fairly shallow underlain by 0.5 m of fairly heavily iron stained diatomaceous earth. The main body of the occurrence is beneath 1-2 m of water. It is about 50 cm of soft, grey-white to white diatomaceous earth.

Summary The diatomaceous earth in Newfound Lake is thin and iron stained. The Lake is quite large and frequently used for fishing and other recreational activities. Only the southern most part of this occurrence would warrant consideration for extraction.

OCCURRENCE 11E/12A 7(•)
Dominic Lake, Cumberland County

Location Tract 11 Claims HJ
Grid Location 63°42'35" 45°30'30"

The occurrence was reported in a marshy lake, Dominic Lake, 2.5 km southwest of Sutherland Lake (Eardley-Wilmot, 1928) (Fig. 36).

Assessment Diatomite was reported to be low grade and extensive, covering the whole Lake. The southern half of Dominic Lake is marshy, containing a fairly poor quality diatomaceous mud (Eardley-Wilmot, 1928).

1987 Program Results Investigation of this occurrence found very little diatomaceous earth. There is a bog with a small brook running through it at the southern end of Dominic Lake. A small lens, 40 cm thick, was found to occur east of the brook at the southern end of the bog. The remainder of the Lake had a highly organic and loosely consolidated gyttja up to 2-3 m in thickness.

Analysis (per cent) (1987)

SiO_2	Al_2O_3	Total Iron	Oxides	LOI
58.63	8.35	2.12	3.77	27.13

Specific Gravity	1.93
As Received Moisture (%)	75.50
As Received Bulk Density (g/cm^3)	1.18
Ash (%)	73.43

Ash Analysis (per cent)

SiO_2	Al_2O_3	Total Iron	Oxides
79.84	11.37	2.89	5.9

OCCURRENCE 11E/12A 8
Slack Lake, Colchester County

Location Tract 3 Claims LO
Grid Location 63°33'10" 45°30'45"

This small Lake is 0.8 km west of the Trans-Canada Highway 104 and 1.5 km southwest of Folly Lake (Nova Scotia Department of Mines and Energy, IMOD# 11E/12-14) (Fig. 36).

Assessment Occurrence was not investigated. The deposit was reported to be pockety over 2.4 ha some of which is of good grade. In places the material is 1.8-2.1 m thick, with 30 cm of high grade diatomite towards the centre of the pocket (Eardley-Wilmot, 1928).

Analysis (per cent) (Eardley-Wilmot, 1928)

SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	H_2O	CO_2*	
82.01	2.41	0.79	0.77	0.68	-	26.62	southern end
67.64	3.58	0.78	0.72	0.73	-	16.66	

12 species/33 varieties

OCCURRENCE 11E/12A 9(•)
Sutherland Lake, Cumberland County

Location Tracts 9;16 Claims P;BCEFGLM
Grid Location 63°40'45" 45°31'00"

Sutherland Lake is located about 7 km northwest of Londonderry on the eastern side of the road to Westchester Station (Fig. 36).

Assessment Occurrence was reported to be very pockety and low grade (Eardley-Wilmot, 1928).

1987 Program Results Investigation of this occurrence outlined a significant amount of diatomaceous earth in the northeastern portion of the Lake beneath 1.5-2.0 m of water. The diatomaceous earth ranges from 0.5-1.0 m in thickness, is light grey to off white in colour and covers an area of 4.6 ha. It is estimated that there is approximately 45 900 t of diatomaceous earth in situ. The in situ reserves of dry crude are estimated to be 19 700 t which upon sintering could yield 17 300 t of diatomite. Sutherland Lake is currently used as a recreational area and is not practical to drain.

Analysis (per cent) (1987)

SiO_2	Al_2O_3	Total Iron	Oxides	LOI
75.71	4.34	3.68	2.74	13.53

Specific Gravity	2.13
As Received Moisture (%)	57.05
As Received Bulk Density (g/cm^3)	1.35
Ash (%)	86.17

Ash Analysis (per cent)

SiO_2	Al_2O_3	Total Iron	Oxides
87.86	5.02	4.18	2.94

OCCURRENCE 11E/12A 10(*)
Webbs Lake, Cumberland County

Location Tract 40 Claims EF
Grid Location 63°41'00" 45°32'50"

Webbs Lake (5 ha area) is located 3 km north of Sutherland Lake, and 2 km east of the road between Westchester Station and Londonderry. Access to the Lake is from a dirt road which runs from the above mentioned road (Nova Scotia Department of Mines and Energy, IMOD# 11E/12-12) (Fig. 36).

Assessment Occurrences were reported to be mainly confined to the eastern end of Webbs Lake and to be of high grade diatomite overlying 30-60 cm of medium grade covering <1 ha (Eardley-Wilmot, 1928).

1987 Program Results However, investigation of Webbs Lake showed that the diatomaceous earth extends over most of the Lake bottom, an area of 3.6 ha and is fairly consistent in thickness, 0.5 m, beneath 1.5 m of water. The diatomite is two grades. The upper grade is medium grey to light tan in colour, and the lower is soft, grey brown and slightly organic. It is estimated that there is about 21 300 t of diatomaceous sediment in this deposit.

Analysis (per cent) (1987)

SiO_2	Al_2O_3	Total Iron	Oxides	LOI
80.58	2.97	0.95	2.07	13.43

Specific Gravity	1.99
As Received Moisture (%)	61.91
As Received Bulk Density (g/cm^3)	1.19
Ash (%)	84.26

Ash Analysis (per cent)

SiO_2	Al_2O_3	Total Iron	Oxides
93.41	3.45	1.13	2.01

OCCURRENCE 11E/12B 11(•)
Silica Lake, Colchester County

Location Tract 22 Claims LO
Grid Location 63°48'25" 45°31'30"

Silica Lake is located 3 km west of Castlereagh, and 13 km north of Bass River (Eardley-Wilmot, 1928) (Fig. 37).

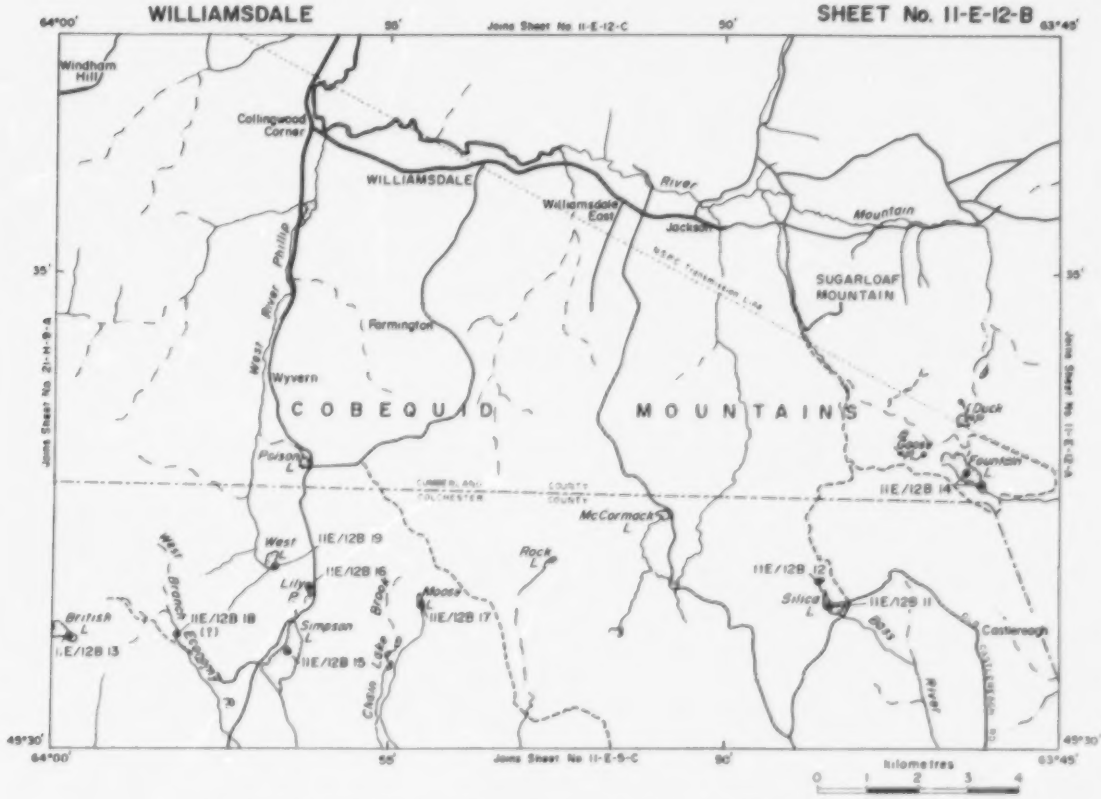

Figure 37. Location map for occurrences 11E/12B 11-19 (Williamsdale)

Assessment This area has virtually been mined out, except for a small amount in the bog ponds at the northern end of Silica Lake (see 11E/12B 12). The Oxford Tripoli Co. operated this site in the early 1900s. The deposit once contained 1-2.5 m of good, grey-white diatomaceous earth over an area of 8 ha. The product was shipped to Haverstraw, New York, for final processing (Eardley-Wilmot, 1928).

Analysis (per cent) (Eardley-Wilmot, 1928)

SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	H_2O	CO_2+	
81.30	-	0.38	-	-	9.34	0.82	finished product

19 species/42 varieties

1986 Program Results Three sites were sampled, but the only significant amount of diatomaceous material was found near the northern part of Silica Lake in a deep (+2 m) trench beneath the water.

Analysis (per cent) (1986)

SiO_2	Al_2O_3	Total Iron	Oxides	LOI
74.44	2.05	0.85	1.58	21.23

Specific Gravity	1.98
As Received Moisture (%)	77.90
As Received Bulk Density (g/cm^3)	1.04
Ash (%)	78.39

Ash Analysis (per cent)

SiO_2	Al_2O_3	Total Iron	Oxides
94.96	2.62	1.08	1.32

OCCURRENCE 11E/12B 12
Silica Lake Bog, Colchester County

Location Tract 27 Claims D
Grid Location 63°48'30" 45°31'40"

This occurrence is found 0.3 km north of Silica Lake, 3 km west of Castlereagh and 13 km north of Bass River (Eardley-Wilmot, 1928) (Fig. 37).

Assessment Occurrence was not investigated. It was reported to be mined out. Deposit once contained approximately 2 m of good diatomite overlain by 2 m of peat (Eardley-Wilmot, 1928).

Analysis (per cent) (Eardley-Wilmot, 1928)

SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	H_2O	CO_2+
81.3	2.44	0.16	-	1.03	15.02	-

13 species/37 varieties

OCCURRENCE 11E/12B 13
British Lake, Colchester County

Location Tract 13 Claims EF
Grid Location 64°00'00" 45°31'15"

British Lake is located 4 km west of Simpson Lake, and 5 km southwest of Wyvern. Access to British Lake is restricted to a private road which begins 1 km north of Wyvern and runs 8 km southwest to the Lake (Nova Scotia Department of Mines and Energy, IMOD# 11E/12-07) (Fig. 37).

Assessment The occurrence was reported to be small and low grade (Eardley-Wilmot, 1928). The site was visited in 1986, however the inaccessibility of British Lake prevented detailed assessment using a boat. No diatomite was observed along the shoreline.

OCCURRENCE 11E/12B 14(*)
Fountain Lake, Cumberland County

Location Tracts 47;48 Claims HJK;E
Grid Location 63°46'20" 45°32'55"

Fountain Lake is located 3 km north of Castlereagh. Access to the Lake is along the power transmission line from the Castlereagh Road (Nova Scotia Department of Mines and Energy, IMOD# 11E/12-10) (Fig. 37).

Assessment The occurrence was reported to be large and of remarkable quality in the very southern portions of Fountain Lake (Eardley-Wilmot, 1928).

1987 Program Results Investigation of this occurrence has defined three major areas (Zones A, B and C) of diatomaceous earth accumulation, each separated by shallow rock shoals. See detailed maps for exact locations of zones in Nova Scotia Department of Mines and Energy, Open File Maps 90-001.

Zone A is in the southeastern half of Fountain Lake and has a large quantity of diatomaceous sediment (142 300 m^3) over an area of about 8 ha. The margins and shallow areas of this basin tend to be filled with a dense, white to off white diatomaceous earth, and the deeper areas are underlain by a softer, medium grey to brown diatomaceous sediment. The white diatomaceous earth covers an estimated area of 4.5 ha averaging between 0.5 and 1.0 m in thickness. To some extent this white diatomaceous earth overlies the softer medium grey to brown diatomaceous earth which covers an estimated 6 ha. The soft grey sediment is not as consolidated as the white, appearing to have substantially higher organics. Approximately 110 300 m^3 of the grey diatomaceous sediment is estimated to occur in this basin in addition to 32 000 m^3 of white diatomaceous earth along the basin margins.

Analysis Zone A (per cent) (1987)

SiO_2	Al_2O_3	Total Iron	Oxides	LOI
71.37	2.14	0.87	2.57	23.05

Specific Gravity	N.A.
As Received Moisture (%)	79.48
As Received Bulk Density (g/cm^3)	1.17
Ash (%)	75.83

Ash Analysis (per cent)

SiO_2	Al_2O_3	Total Iron	Oxides
93.63	3.02	1.22	2.13

Zone B is the western basin of Fountain Lake and is about the same size as Zone A, however it is not as uniform due to a number of small rock bars and deep subbasins. The diatomaceous earth is not as dense in this part of the Lake as it is in the southeastern half, although it does become quite firm near the shores and margins of the rock bars. Some iron staining is also noted in these areas. Most of the Lake bottom is covered by soft, grey diatomaceous sediment. The sediment averages 1.5 m in thickness over an estimated area of 4 ha indicating approximately 59 500 m^3 of diatomaceous sediment. In many areas, light grey to white diatomaceous material overlies the soft, grey diatomaceous sediment. It was found to average about 0.5 m in thickness, over an estimated area of 6.3 ha indicating 34 450 m^3 of diatomaceous sediment in situ.

Analysis Zone B (per cent) (1987)

SiO_2	Al_2O_3	Total Iron	Oxides	LOI
73.33	2.57	1.10	5.13	17.87

Specific Gravity	N.A.
As Received Moisture (%)	77.78
As Received Bulk Density (g/cm^3)	1.21
Ash (%)	78.46

Ash Analysis (per cent)

SiO_2	Al_2O_3	Total Iron	Oxides
93.40	3.31	1.43	1.86

Zone C is a small cove on the western side of Fountain Lake, at the end of the median bar. It was found to have up to 2 m of dense, white diatomaceous sediment over about 0.33 ha. It is estimated that there would be 4300 t of white diatomaceous sediment in this small basin. The basin is nearly isolated from the main part of the Lake, however two large springs may prevent it from being pumped free of water.

Analysis (per cent) (1987)

SiO_2	Al_2O_3	Total Iron	Oxides	LOI
86.36	1.53	0.32	4.52	7.27

Specific Gravity	N.A.
As Received Moisture (%)	62.83
As Received Bulk Density (g/cm^3)	1.31
Ash (%)	88.99

Ash Analysis (per cent)

SiO_2	Al_2O_3	Total Iron	Oxides
97.04	1.72	0.35	0.89

Estimate of Reserves (Diatomaceous Sediments)

	Dense White		Soft Grey		Total	
	m^3	t	m^3	t	m^3	t
Zone A	31 950	(37 380)	110 350	(129 110)		
Zone B	34 460	(41 700)	59 500	(72 000)		
Zone C	3 300	(4 300)	-	-		
Total	71 710	(83 400)	169 850	(201 110)	241 560	(284 510)

Fountain Lake would be difficult to drain and has a number of summer homes around its shore. The Lake is frequently used for recreational purposes reducing the likelihood of development. However, if the small cove on the western side (Zone C) could be isolated from the remainder of the Lake, it may warrant consideration for development.

OCCURRENCE 11E/12B 15
Simpson Lake, Colchester County

Location Tracts 10;15 Claims PQ;ABHJ
Grid Location 63°56'35" 45°31'15"

Simpson Lake is about 5 km south of Wyvern, and 0.5 km south of Lily Pond (Nova Scotia Department of Mines and Energy, IMOD# 11E/12-15) (Fig. 37).

Assessment Occurrence was not investigated. It was reported to be small and of no commercial value (Eardley-Wilmot, 1928).

OCCURRENCE 11E/12B 16(•)
Lily Pond, Colchester County

Location Tracts 16;33 Claims N;D
Grid Location 63°56'10" 45°31'35"

Lily Pond is a small pond on the western side of the road which runs south from Collingwood Corner. The Pond is approximately 5 km south of Wyvern (Nova Scotia Department of Mines and Energy, IMOD# 11E/12-03) (Fig. 37).

Assessment Lily Pond is a small occurrence which was possibly mined at one time. It was reported to have a high silica content over 1.6 ha and 1 m in thickness (Eardley-Wilmot, 1928).

1986 Program Results Investigation of the Pond showed a high organic sediment content on either side of a ridge running east-west through the middle of the Pond. The diatomaceous sediment was found to be 3-3.5 m thick in the basins and only 30 cm thick on top of the ridge. The diatomaceous sediment on the ridge was dense and white in colour and the deeper material quite dark and soft. It is estimated that there is 38 500 t of diatomite in this occurrence of which only 20% is dense white. At 86.2% moisture there would be 5300 t of dry crude product of which 24% would be lost on sintering, indicating about 4040 t of dry finished product in situ.

Analysis (per cent) (1986)

SiO_2	Al_2O_3	Total Iron	Oxides	LOI
72.35	1.77	0.60	1.13	34.59

Specific Gravity	2.07
As Received Moisture (%)	86.18
As Received Bulk Density (g/cm^3)	1.05
Ash (%)	75.84

Ash Analysis (per cent)

SiO_2	Al_2O_3	Total Iron	Oxides
95.39	2.33	0.79	1.49

OCCURRENCE **11E/12B 17(•)**
Moose Lake, Colchester County

Location Tract 17 Claims OL
Grid Location 63°54'30" 45°31'30"

Moose Lake is 2 km east of Simpson Lake, and 5 km southeast of Wyvern. Access to the Lake is by woods road which begins 1 km east of Poison Lake (Nova Scotia Department of Mines and Energy, IMOD# 11E/12-05) (Fig. 37).

Assessment Moose Lake was reported to have 0.6-0.9 m of dense, good grade diatomite covering about 2.4 ha (Eardley-Wilmot, 1928).

1987 Program Results Investigation of Moose Lake involved five sample sites of which three confirmed diatomaceous earth. The sediments are two distinct types. The first is a soft, dark brown, organic diatomaceous material underlain by the second, a fairly firm, yellow-grey diatomaceous sediment up to 0.4 m thick. This is often underlain by diatomaceous sediment similar to the first material. The sediment in the Lake is up to 2 m thick, but on average is about 1.5 m of which 30% is fairly good quality diatomaceous sediment.

Analysis (per cent) (1987)

SiO_2	Al_2O_3	Total Iron	Oxides	LOI
62.61	4.25	1.05	3.62	28.47

Specific Gravity	2.02
As Received Moisture (%)	83.58
As Received Bulk Density (g/cm^3)	1.17
Ash (%)	70.19

Ash Analysis (per cent)

SiO_2	Al_2O_3	Total Iron	Oxides
88.94	6.18	1.55	3.3

OCCURRENCE 11E/12B 18
West Branch Economy River, Colchester County

Location Tract uncertain Claims
Grid Location

The exact occurrence location was not available in the reference material. Faribault and Fletcher (1905) listed it as an occurrence (Fig. 37).

Assessment Occurrence was not investigated.

OCCURRENCE 11E/12B 19(*)
West Lake, Colchester County

Location Tract 34 Claims BG
Grid Location 63°56'45" 45°31'55"

West Lake is located about 4 km south of Wyvern and 1 km west of the road which runs south from Collingwood Corner. To access the Lake, a woods road leads 1 km south of Poison Lake from the Collingwood Corner road (Eardley-Wilmot, 1928; Nova Scotia Department of Mines and Energy, IMOD# 11E/12-11) (Fig. 37).

1987 Program Results The West Lake occurrence was investigated. The diatomaceous material found was thin (6-8 cm) and grey white in colour. It occurred sporadically over the Lake bottom.

11F/14

OCCURRENCE 11F/14A 1
River Denys, Inverness County

Location Tract 8 Claims uncertain
Grid Location

Reported to occur in the marshes near the post office in the Community of River Denys (Eardley-Wilmot, 1928; Nova Scotia Department of Mines and Energy, IMOD# 11F/14-08) (Fig. 38).

1987 Program Results A number of marshes and ponds were investigated in this area, but no diatomite was found to occur.

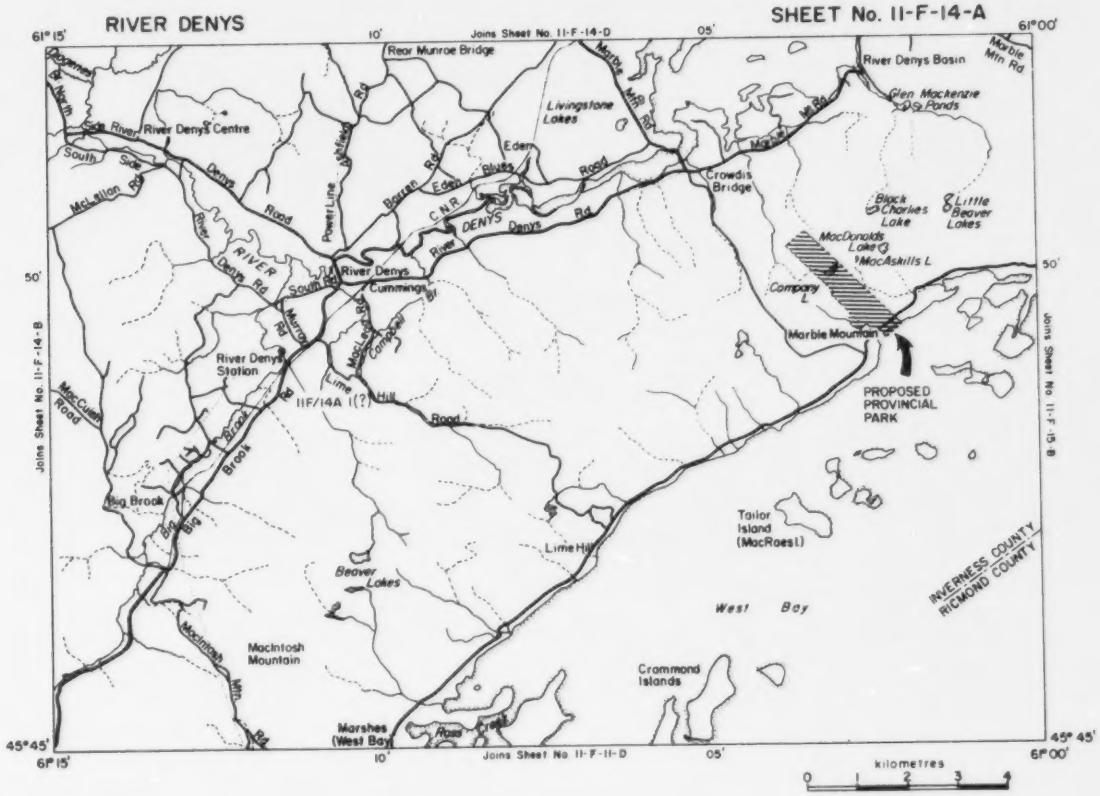

Figure 38. Location map for occurrence 11F/14A 1 (River Denys)

OCCURRENCE 11F/14D 2
Ashfield, Inverness County

Location Tract 17 Claim N
Grid Location 61°09'50" 45°53'50"

Location of occurrence is believed to be in a small pond surrounded by bog 2 km south of Ashfield and 5 km west of Orangedale (Eardley-Wilmot, 1928; Nova Scotia Department of Mines and Energy, IMOD# 11F/14-07) (Fig. 39).

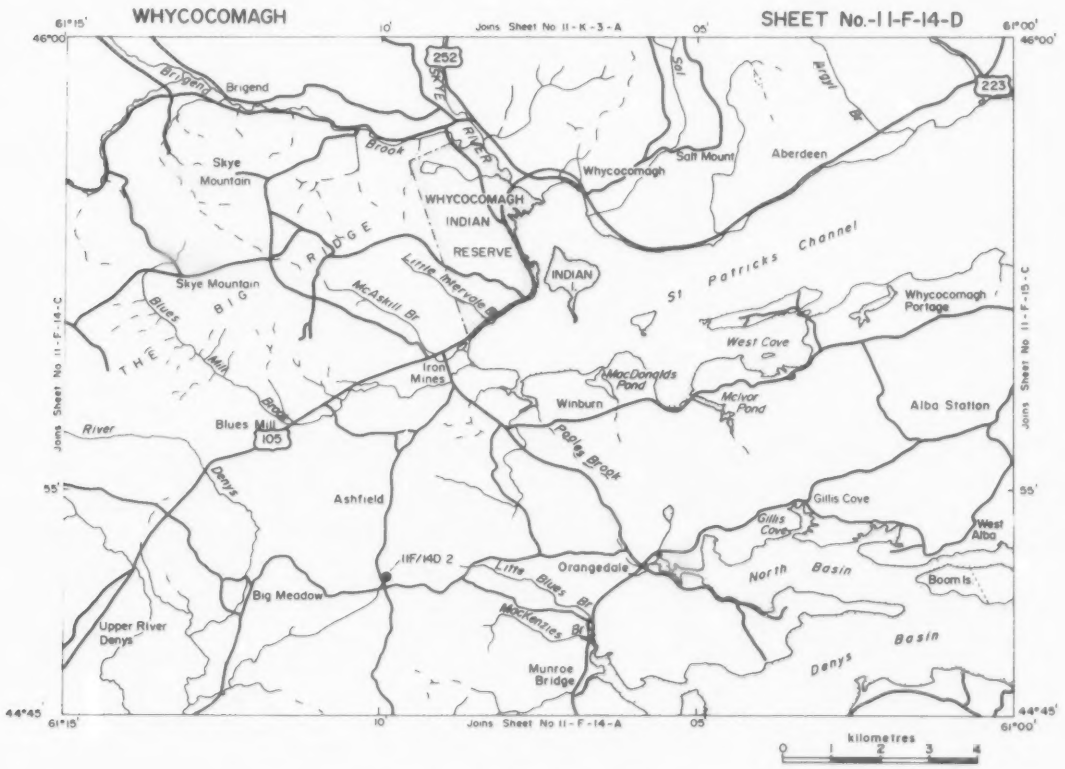

Figure 39. Location map for occurrence 11F/14D 2 (Whycocomagh)

1987 Program Results Site was investigated, however only a small lens (5 cm) of white sediment laden with gastropod and bivalve shells was found to occur beneath a few metres of peat. Analysis indicates this material is not diatomite.

Analysis (per cent) (1987)

SiO_2	Al_2O_3	Total Iron	Oxides	LOI	(CaO)
21.42	3.69	1.80	33.40	39.69	(29.82)

Specific Gravity	N.A.
As Received Moisture (%)	67.76
As Received Bulk Density (g/cm^3)	1.20
Ash (%)	58.97

11F/16

OCCURRENCE 11F/16C 1
MacEachern Lake, Cape Breton County

Location Tracts 102;103 Claims NO;Q
Grid Location 60°22'30" 46°00'00"

MacEachern Lake was not referred to by name, however it is believed to be the lake 2.5 km south of East Bay and 4 km west of Glen Morrison referred to by Eardley-Wilmot (1928) (Fig. 40).

Assessment Occurrence was not investigated.

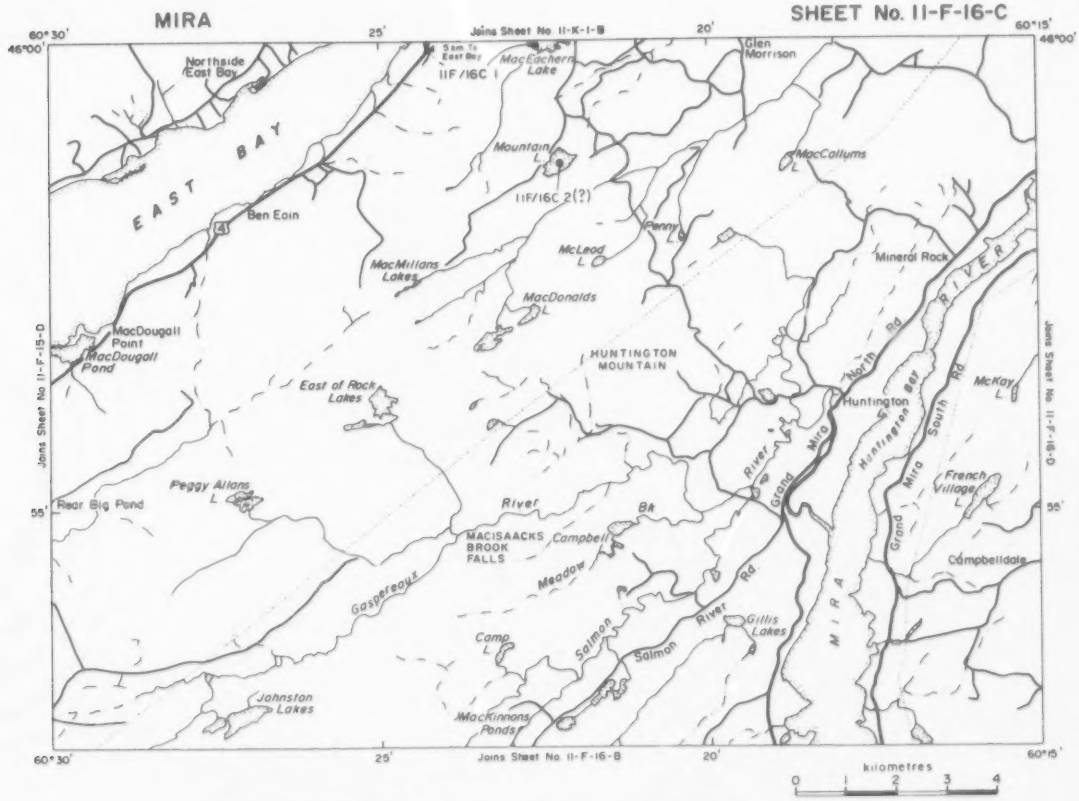

Figure 40. Location map for occurrences 11F/16C 1-2 (Mira)

OCCURRENCE 11F/16C 2
Mountain Lake, Cape Breton County

Location Tract 91 Claims uncertain
Grid Location

Location is uncertain (Eardley-Wilmot, 1928) (Fig. 40).

Assessment Occurrence was not investigated.

11G/13

OCCURRENCE 11G/13C 1(•)
Grand Lake, Cape Breton County

Location Tracts 62;63;82;83 Claims uncertain
Grid Location

Grand Lake is located adjacent to the Sydney-Louisbourg Highway (Route 22) about 4 km southeast of Catalone (Fig. 41).

1987 Program Results Investigation of Grand Lake found it to have small thin occurrences of diatomaceous earth in secluded or sheltered bays on the eastern side. The material, as reported in earlier documents (Eardley-Wilmot, 1928), is heavily iron stained.

Figure 41. Location map for occurrences 11G/13C 1-2 (Louisbourg)

OCCURRENCE 11G/13C 2(•)
McCuishs Lake, Cape Breton County

Location Tracts 87;88;105;106 Claims Q;N;D;A
Grid Location 59°56'00" 45°58'45"

McCuishs Lake is 4 km northeast of Route 22, and 1 km east of Catalone Lake. Access to the Lake is by an old farm road through a gravel pit 1 km north of the abandoned railway bed (Eardley-Wilmot, 1928) (Fig. 41).

1987 Program Results Occurrence was found to have significant reserves of diatomaceous sediment in a wide band around the perimeter of the 6.5 ha McCuishs Lake. The material is very dense and clay like ranging from 20-60 cm in thickness. There is estimated to be 7200 t of diatomaceous sediment around the Lake which could yield 1823 t of sintered diatomite. The white diatomaceous sediment grades into soft, grey-brown to dark grey-green organic ooze or gyttja towards the centre of the Lake. It appears that there were early attempts to drain the Lake, however the reasons are unknown.

Analysis (per cent) (1987)

SiO_2	Al_2O_3	Total Iron	Oxides	LOI
71.34	3.73	1.28	2.28	21.37

Specific Gravity	1.97
As Received Moisture (%)	77.54
As Received Bulk Density (g/cm^3)	1.20
Ash (%)	77.92

Ash Analysis (per cent)

SiO_2	Al_2O_3	Total Iron	Oxides
91.38	4.90	1.64	2.08

11K/02

OCCURRENCE 11K/02A 1
Boisdale, Cape Breton County

Location Tract uncertain Claims
Grid Location

This occurrence was reported to be located in a small marsh 2 km southeast of the Canadian National train station in Boisdale (Nova Scotia Museum, 983) (Fig. 42).

Assessment Occurrence was not investigated. Location is uncertain.

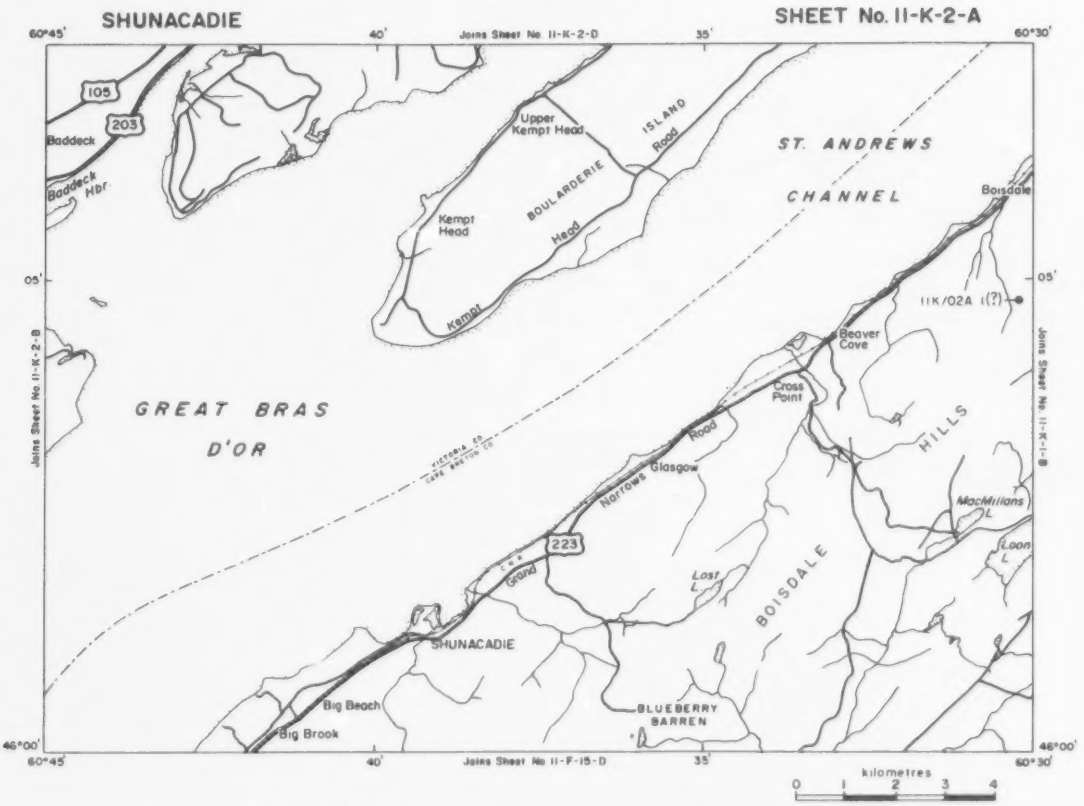

Figure 42. Location map for occurrence 11K/02A 1 (Shunacadie)

OCCURRENCE 11K/02D 2
MacLeods Point (Tripoli Lake, local name), Victoria County

Location Tract uncertain Claims
Grid Location

Tripoli Lake (local name) is difficult to locate. It is about a 4 km walk west from MacLeods Point along a road and trail from just north of MacLeods Point (Nova Scotia Museum, 979, 980) (Fig. 43).

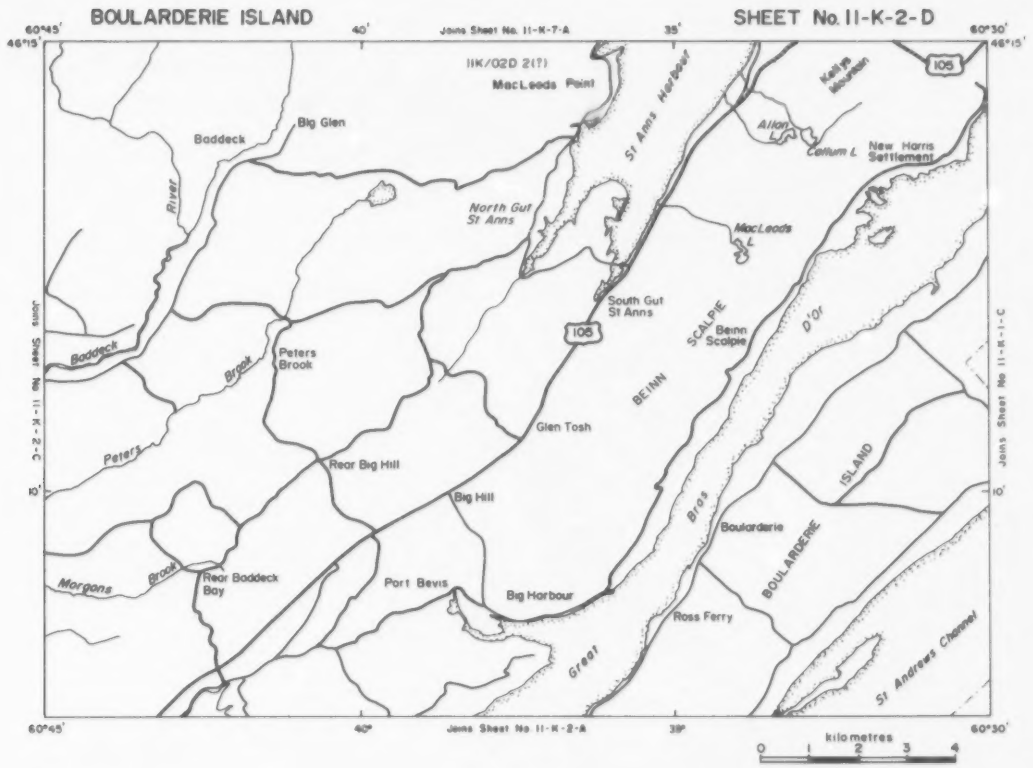

Figure 43. Location map for occurrence 11K/02D 2 (Boularderie Island)

Assessment Several ponds in the area were mined between 1896 and 1917 by Premier Tripoli Co. Material was reported to be of good quality, but scattered (Eardley-Wilmot, 1928).

Analysis (per cent) (Eardley-Wilmot, 1928)

SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	H_2O	CO_2^+
72.1	-	0.51	-	-	10.70	6.30

1987 Program Results Investigation of the old workings at Tripoli Lake was for reference only. One sample was collected from the shore of the tiny pond. The material was light grey and fairly gritty.

Analysis (per cent) (1987)

SiO_2	Al_2O_3	Total Iron	Oxides	LOI
76.07	3.69	0.56	2.51	17.17

Specific Gravity	2.02
As Received Moisture (%)	24.50
As Received Bulk Density (g/cm^3)	0.40
Ash (%)	81.85

Ash Analysis (per cent)

SiO_2	Al_2O_3	Total Iron Oxides
92.24	4.51	0.68 2.57

11K/07

OCCURRENCE 11K/07A 1
Tarbotvale, Victoria County

Location Tract 92 Claim D
Grid Location 60°36'00" 46°21'30"

Ponds at Tarbotvale were reported to contain diatomite (Eardley-Wilmot, 1928) (Fig. 44).

Assessment A number of occurrences were reported in the ponds of the area (Eardley-Wilmot, 1928).

1987 Program Results The bog area surrounding the Tarbotvale ponds was sampled, but no significant amounts of diatomite were found.

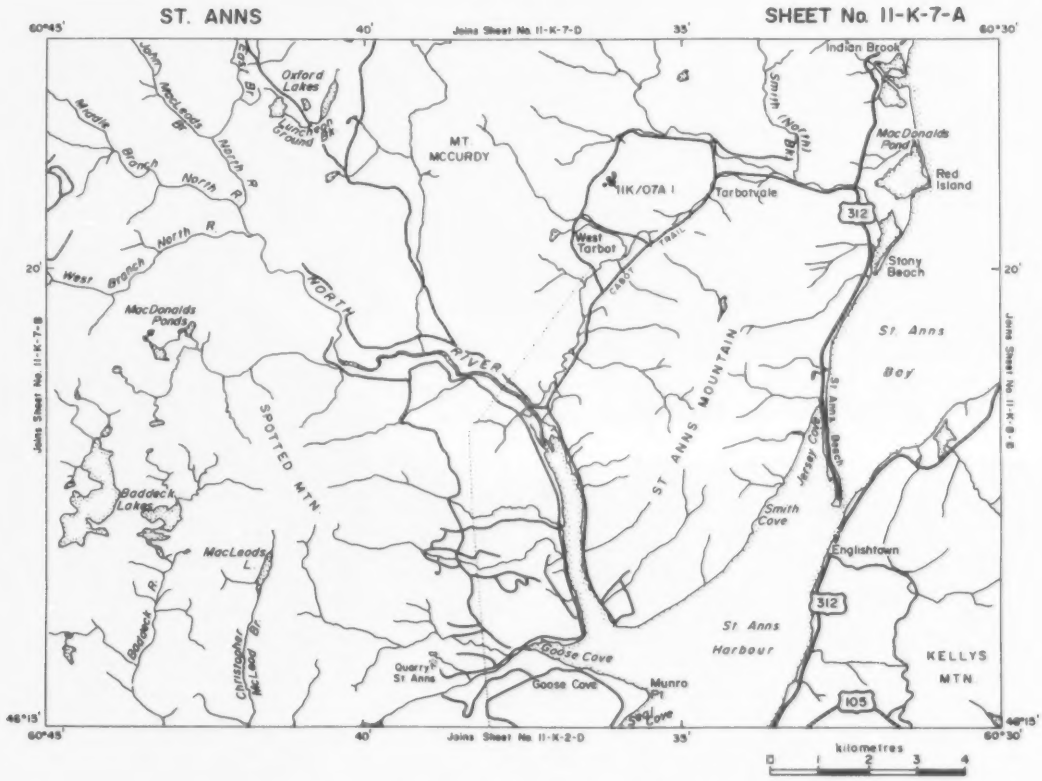

Figure 44. Location map for occurrence 11K/07A 1 (St. Anns)

11K/08

OCCURRENCE 11K/08B 1
Kellys Mountain, Victoria County

Location Tract uncertain Claims
Grid Location

Several ponds on the top of Kellys Mountain were reported to contain diatomite (Eardley-Wilmot, 1928) (Fig. 45).

Assessment Occurrence was not investigated.

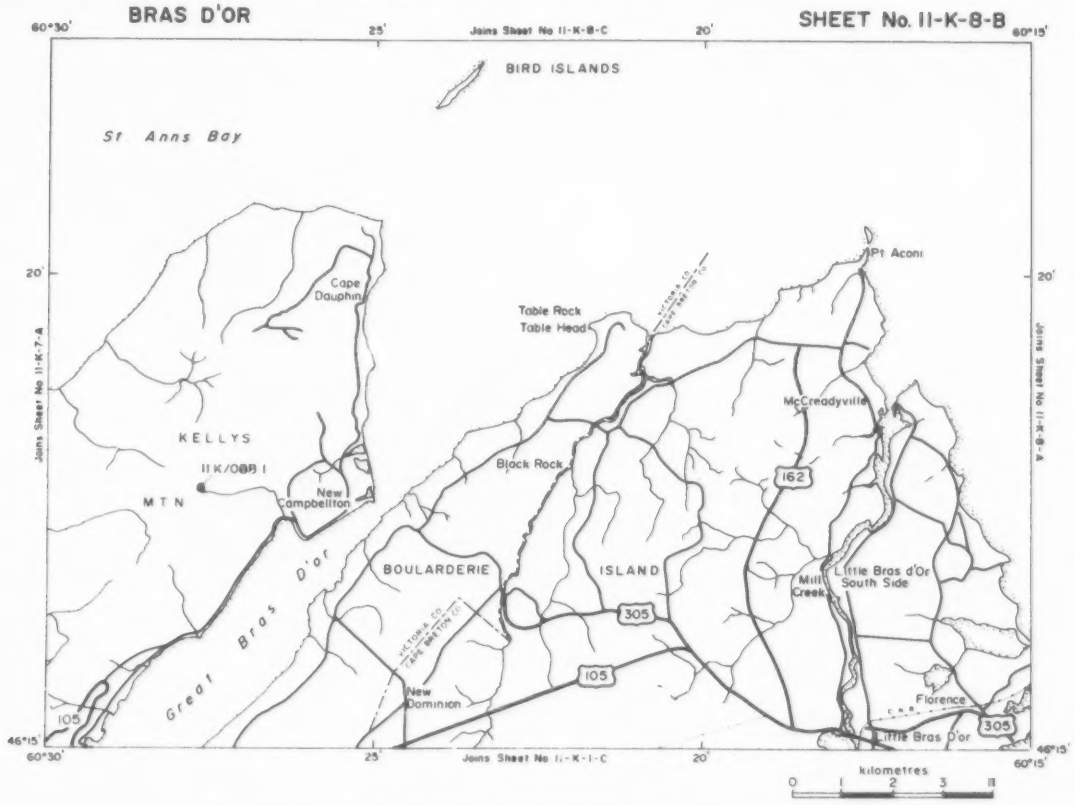

Figure 45. Location map for occurrence 11K/08B 1 (Bras d'Or)

11K/09

OCCURRENCE 11K/09B 1
Cape Smokey, Victoria County

Location Tract uncertain Claims
Grid Location

This occurrence was reported to occur on top of the headland south of Ingonish Harbour (Eardley-Wilmot, 1928) (Fig. 46).

Assessment Occurrence was not investigated. Several ponds in the vicinity were reported to hold some diatomite (Eardley-Wilmot, 1928). Ponds are about 280 m above sea level and are very small.

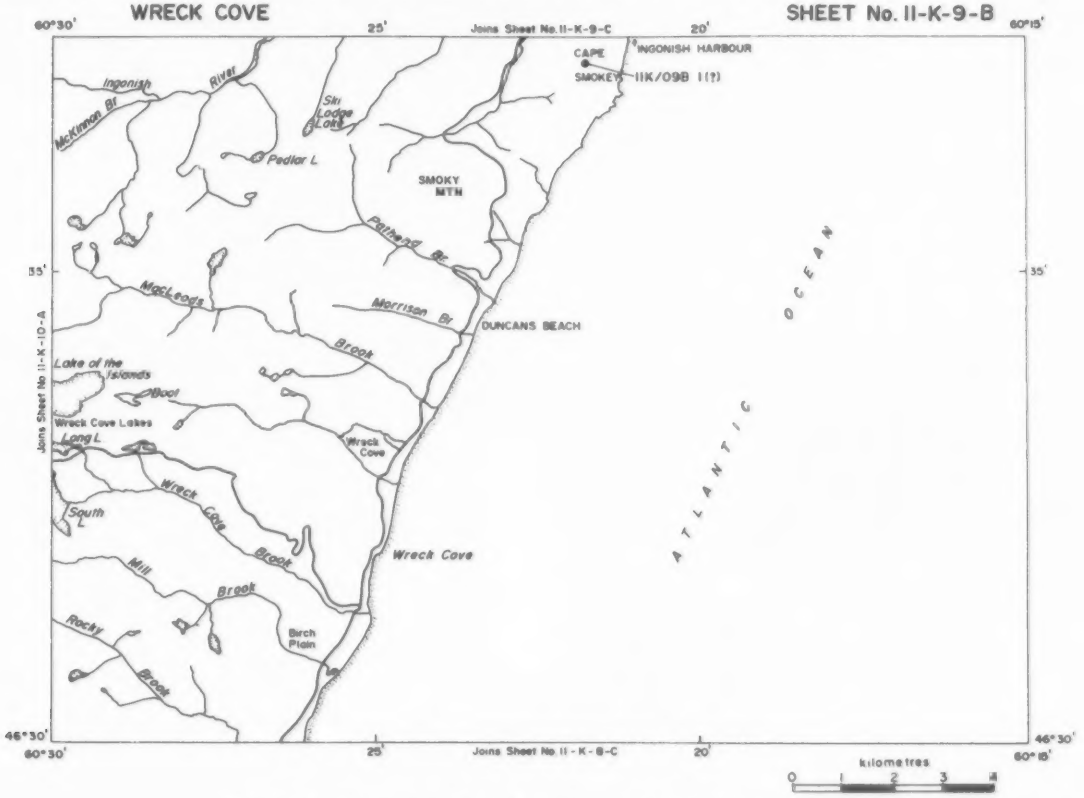

Figure 46. Location map for occurrence 11K/09B 1 (Wreck Cove)

20P/13

OCCURRENCE 20P/13D 1
Barclay Lake, Yarmouth County

Location Tract uncertain Claims
Grid Location

Barclay Lake is 2 km north of the new road from East Kemptville to Upper Ohio near the Yarmouth County and Shelburne County line (Faribault, 1918) (Fig. 47).

Assessment Occurrence location was not clearly described (Faribault, 1918). Occurrence was not investigated.

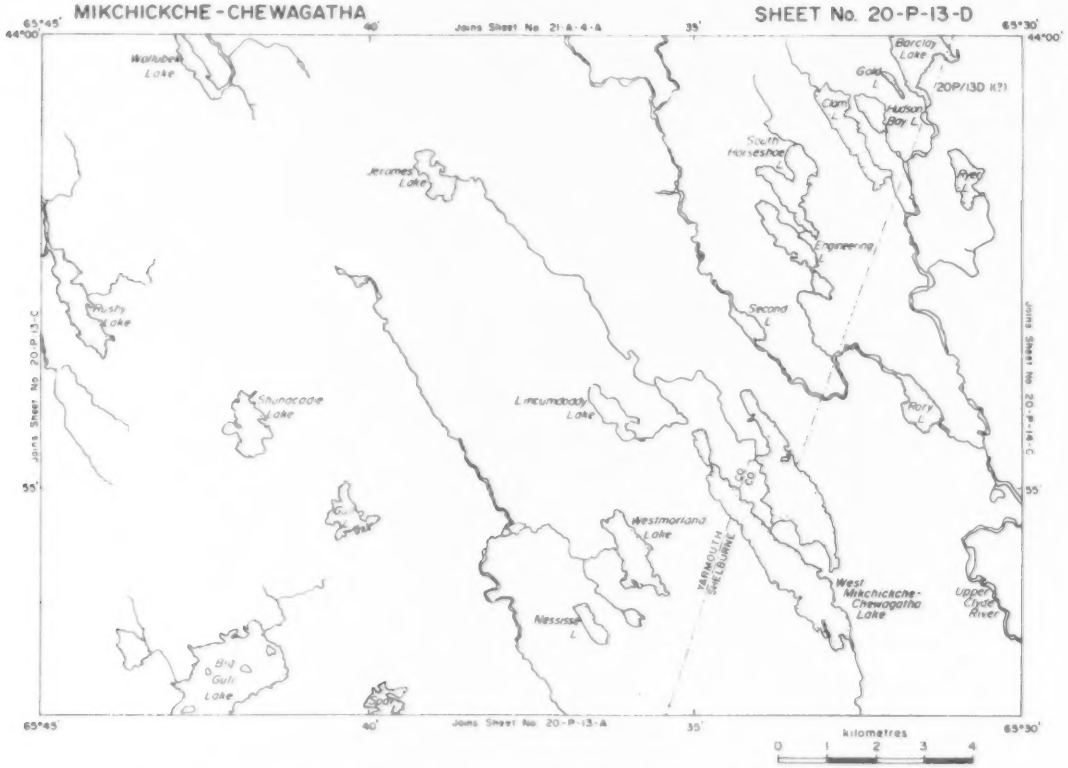

Figure 47. Location map for occurrence 20P/13D 1 (Mikchickche-chewagatha Lake)

20P/14

OCCURRENCE 20P/14C 1(•)
Middle Ohio, Shelburne County

Location Tract 56 Claim L
Grid Location 65°24'30" 43°56'15"

This occurrence is on McGills Island (local name) in the middle of the Roseway River, 18 km north of Shelburne (Fig. 48).

Assessment This occurrence was reported to be 30-60 cm of medium grade, gritty diatomite on a small island in Roseway River. Several patches of impure material along the shores and edge of this Island were reported to be nearly all sand and sponge spicules (Eardley-Wilmot, 1928).

Analysis (per cent) (Eardley-Wilmot, 1928)

SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	H_2O	CO_2^+
83.75	6.30	1.10	-	0.35	6.1	1.22

1987 Program Results Recent evaluation of the occurrence failed to find any diatomaceous earth, however a small occurrence in a marsh on the southern side of McGills Island (local name) was found. The diatomaceous earth is 10-20 cm thick beneath 20 cm of organics. The area of the occurrence is less than 0.25 ha.

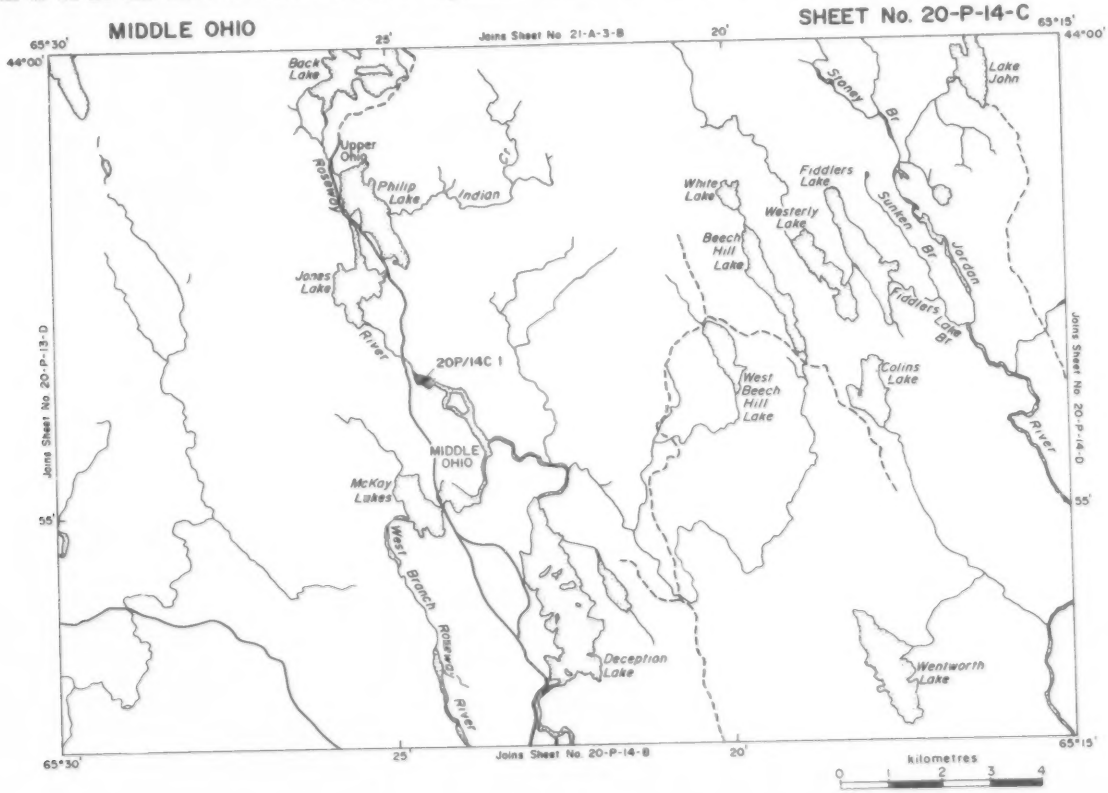

Figure 48. Location map for occurrence 20P/14C 1 (Middle Ohio)

21A/03

OCCURRENCE 21A/03B 1
Harlow Hill, Shelburne County

Location Tract uncertain Claims
Grid Location

This occurrence is 2 km north of Lake John along the Jordan River. It is found in the meadows along the River banks (Eardley-Wilmot, 1928) (Fig. 49).

Assessment Occurrence is too remote to warrant investigation. Extent and thickness are unknown, but reported to be of good quality. White diatomaceous sediment was reported to occur in the marshes along the stillwater above Lake John (Faribault, 1918).

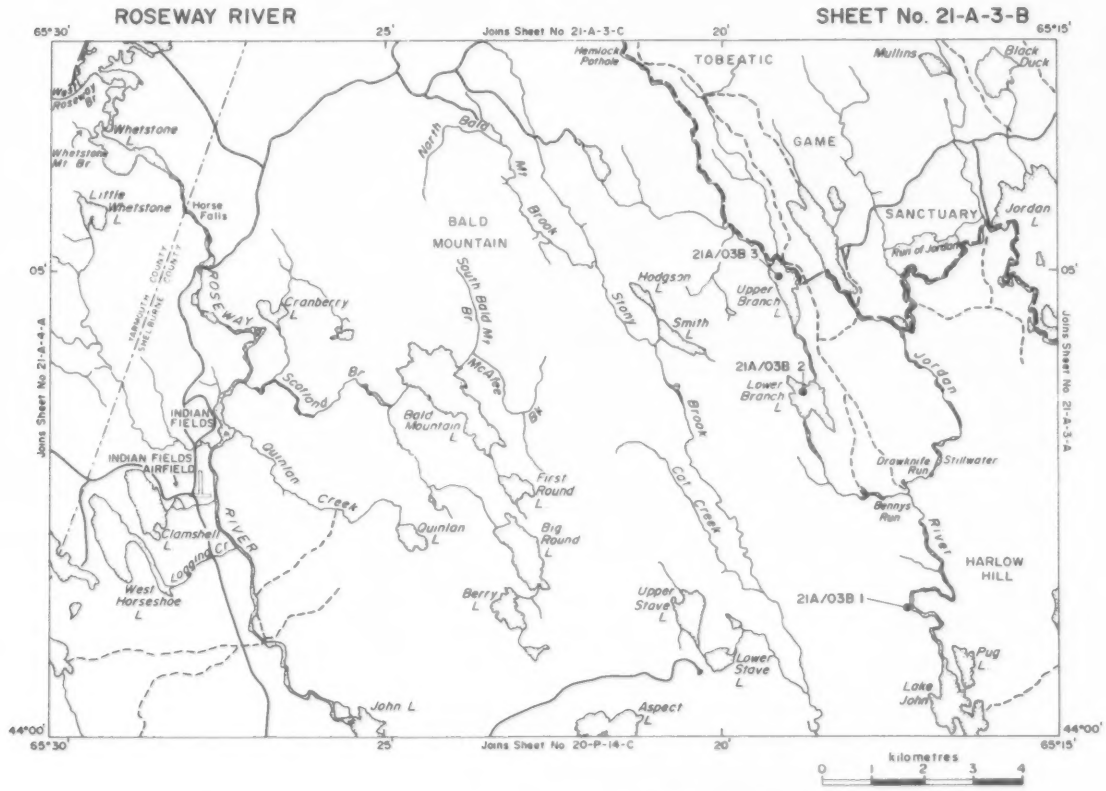

Figure 49. Location map for occurrences 21A/03B 1-3 (Roseway River)

OCCURRENCE 21A/03B 2
Lower Branch Lake, Shelburne County

Location Tracts 51;52 Claims CDEF;AHJ
Grid Location 65°18'50" 44°03'30"

Lower Branch Lake is part of the Jordan River, approximately 6 km north of Lake John (Faribault, 1918) (Fig. 49).

Assessment Occurrence is too remote to warrant investigation.

OCCURRENCE 21A/03B 3
Upper Branch Lake, Shelburne County

Location Tracts 69;76 Claims uncertain
Grid Location

Upper Branch Lake is 1.5 km north of Lower Branch Lake on the Jordan River, and 5 km west of Jordan Lake (Faribault, 1918) (Fig. 49).

Assessment Occurrence is too remote to warrant investigation.

21A/04

OCCURRENCE 21A/04B 1(*)
Snare Lake, Digby County

Location Tract 86 Claims BFGKO
Grid Location 65°57'40" 44°06'10"

Snare Lake is 5 km east of Hectanooga and about 3 km west of Route 340 (Eardley-Wilmot, 1928; Nova Scotia Department of Mines and Energy, IMOD# 21A/04-02) (Fig. 50).

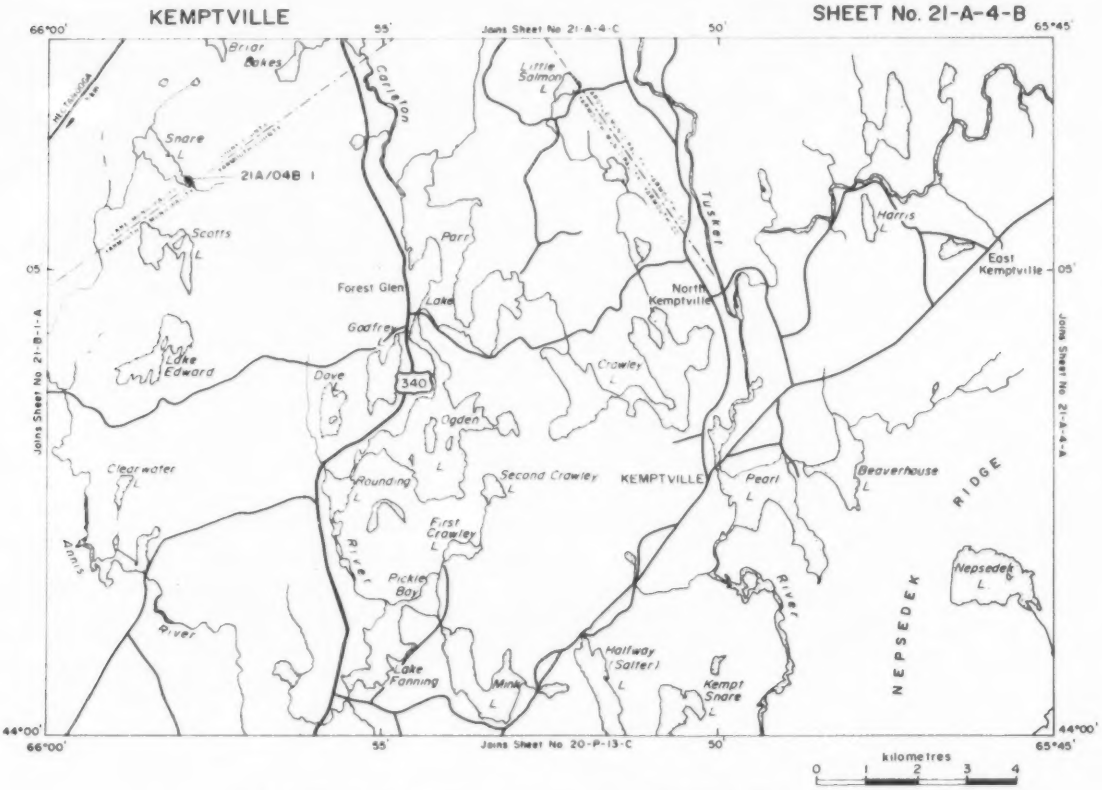

Figure 50. Location map for occurrence 21A/04B 1 (Kemptville)

1987 Program Results No significant amount of diatomaceous earth was found at this location. Six sites were investigated. Water depths ranged from 1.5-2.5 m. Most of the sediment found was organic, either peat or a dark olive-grey, semiorganic ooze. Some diatoms were found in the samples, but not enough to warrant serious consideration.

Analysis (per cent) (1987)

SiO_2	Al_2O_3	Total Iron	Oxides	LOI
59.97	7.52	3.00	4.53	24.98

Specific Gravity	2.22
As Received Moisture (%)	64.68
As Received Bulk Density (g/cm^3)	1.20
Ash (%)	74.45

Ash Analysis (per cent)

SiO_2	Al_2O_3	Total Iron	Oxides
81.06	9.71	4.02	5.21

OCCURRENCE 21A/04C 2
Harlow Lake, Digby County

Location Tracts 72;73 Claims NO;BCD
Grid Location 65°46'00" 44°12'30"

Harlow Lake is 10 km north of North Kemptville at the headwaters of the Tusket River (Nova Scotia Department of Mines and Energy, IMOD# 21A/04-01) (Fig. 51).

Assessment Occurrence was not investigated. Nova Scotia Department of Mines and Energy (IMOD# 21A/04-01) listed it as an occurrence. No further description is available.

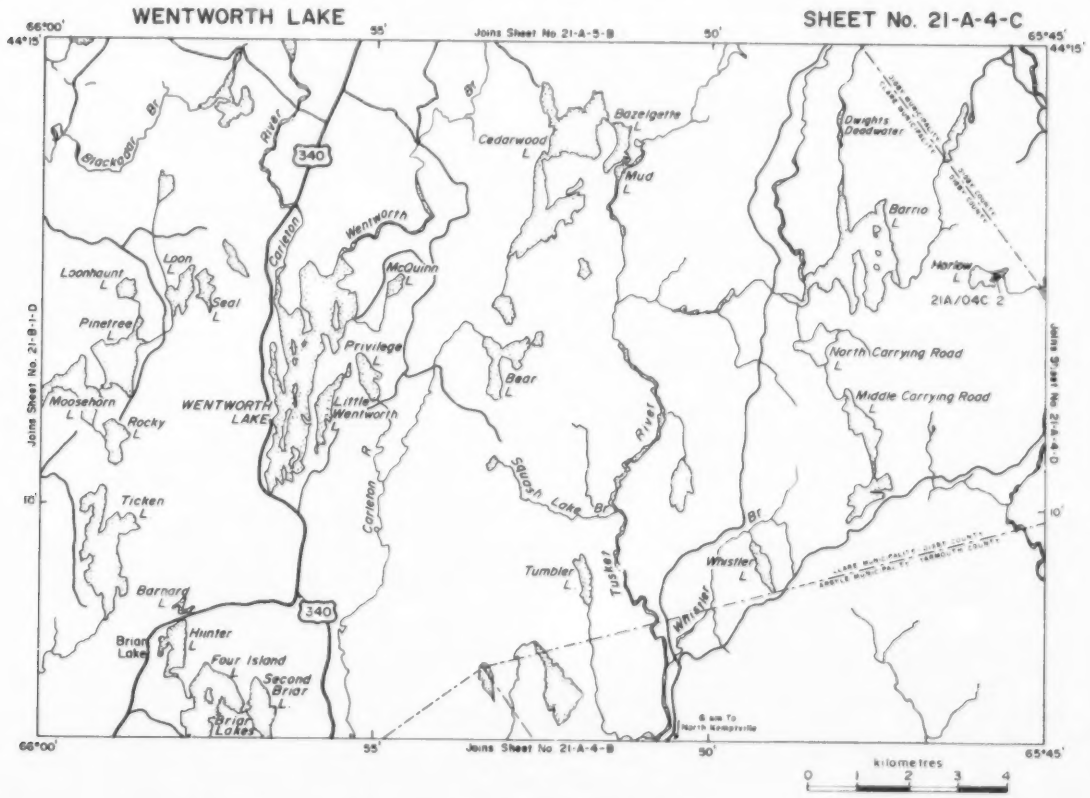

Figure 51. Location map for occurrence 21A/04C 2 (Wentworth Lake)

21A/06

OCCURRENCE 21A/06A 1
Loon Island, Queens County

Location Tracts 57;64 Claims GKO;CD
Grid Location 65°10'36" 44°18'30"

The Loon Island occurrence is located on the Mersey River within the boundary of Kejimkujik National Park. The diatomite was reported to occur at the foot of Loon Lake along the shores of Loon Island in the Mersey River (Faribault, 1915; 1916; Nova Scotia Museum, 981) (Fig. 52).

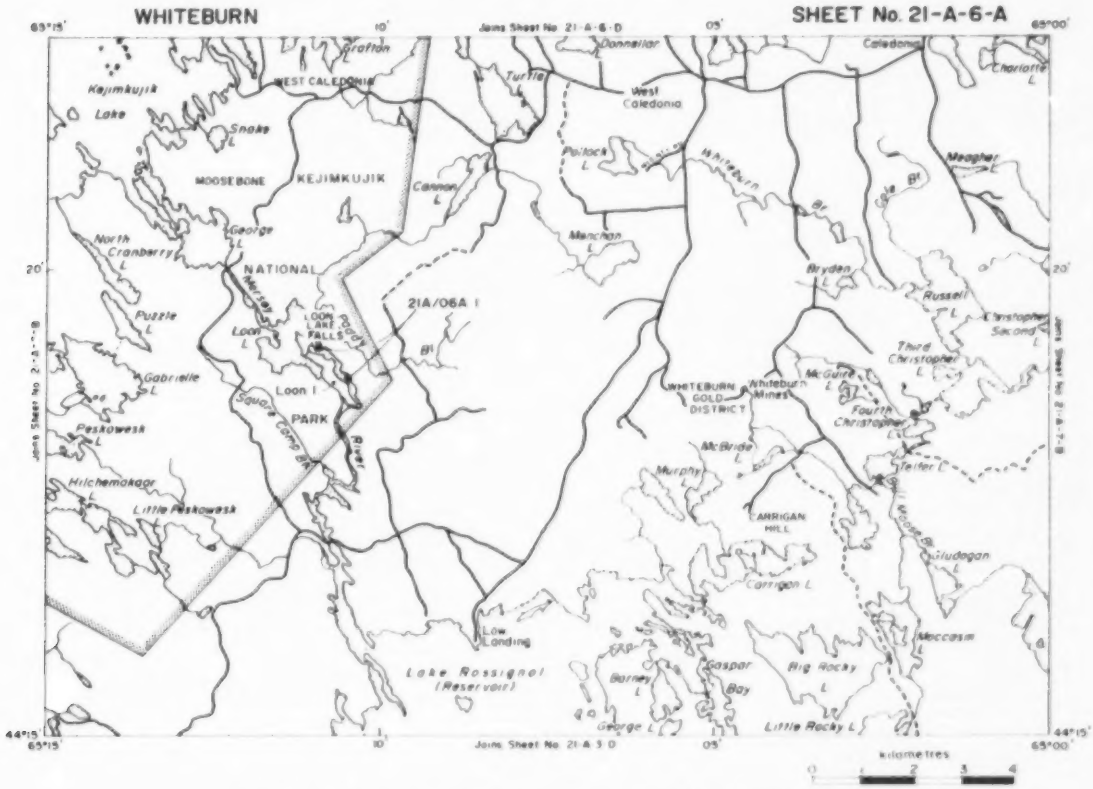

Figure 52. Location map for occurrence 21A/06A 1 (Whiteburn)

Assessment This occurrence was not investigated because it is within the boundaries of Kejimkujik National Park. Diatomite occurrences have been found in the meadow flats bordering the Mersey River covering an area of 45 000 m^2 varying from 30-120 cm in thickness. The reported estimate of volume is about 21 000 m^3 or about 9250 t of air dried material (Faribault, 1915; 1916).

Analysis (per cent) (Eardley-Wilmot, 1928)

SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	H_2O	CO_2+	
83.70	4.66	1.74	-	1.09	6.50	1.20	southern end of Island
77.00	10.23	2.37	-	1.89	6.10	0.34	centre of Island
81.30	4.06	1.74	-	1.59	7.70	1.15	average (southern end)

11 species/19 varieties

OCCURRENCE 21A/06D 2

Mersey River, Annapolis County

Location Tract uncertain Claims
Grid Location

Location of the occurrence is uncertain (Eardley-Wilmot, 1928) (Fig. 53).

Assessment Occurrence was not investigated. Eardley-Wilmot (1928) listed Mersey River as an occurrence, but exact location and description were not provided.

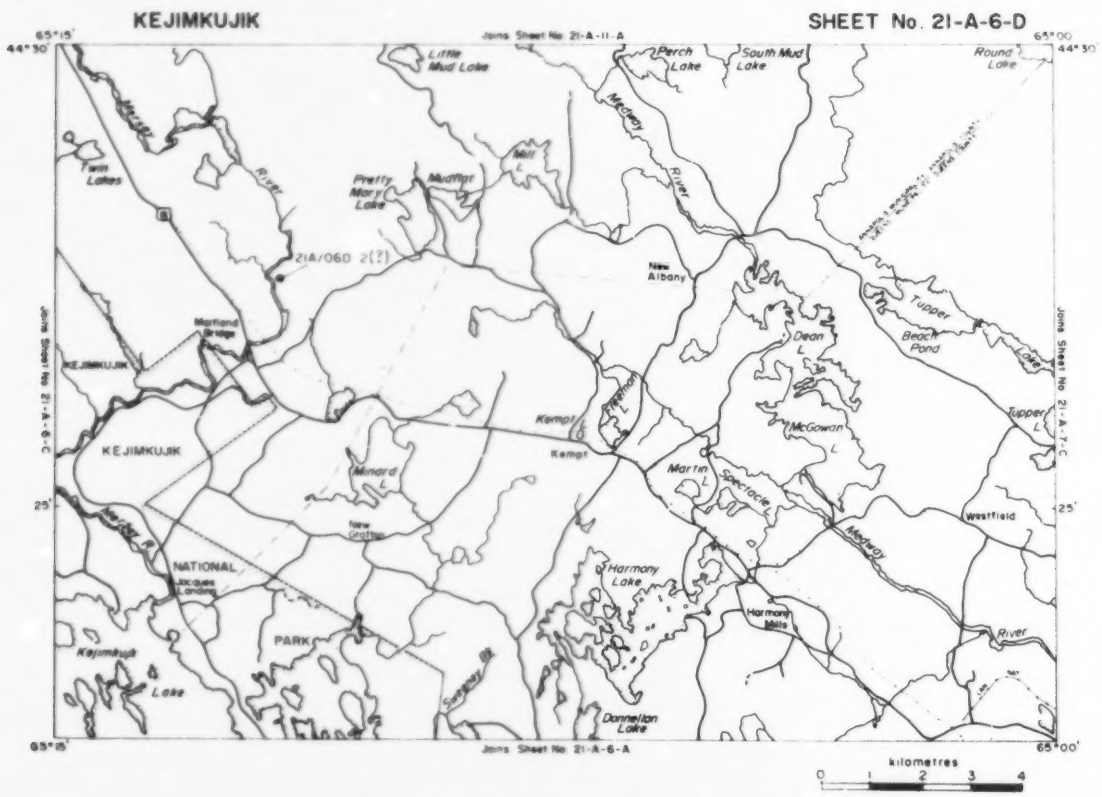

Figure 53. Location map for occurrence 21A/06D 2 (Kejimkujik)

21A/09

OCCURRENCE 21A/09A 1
Stanford Lake, Lunenburg County

Location Tract 37 Claims LMNO
Grid Location 64°14'00" 44°33'10"

Stanford Lake is just north of Chester above the Canadian National Railway line (Faribault and Wright, 1913) (Fig. 54).

Assessment Occurrence was not investigated. Faribault and Wright (1931) listed Stanford Lake as an occurrence, but a description was not available in the reference material.

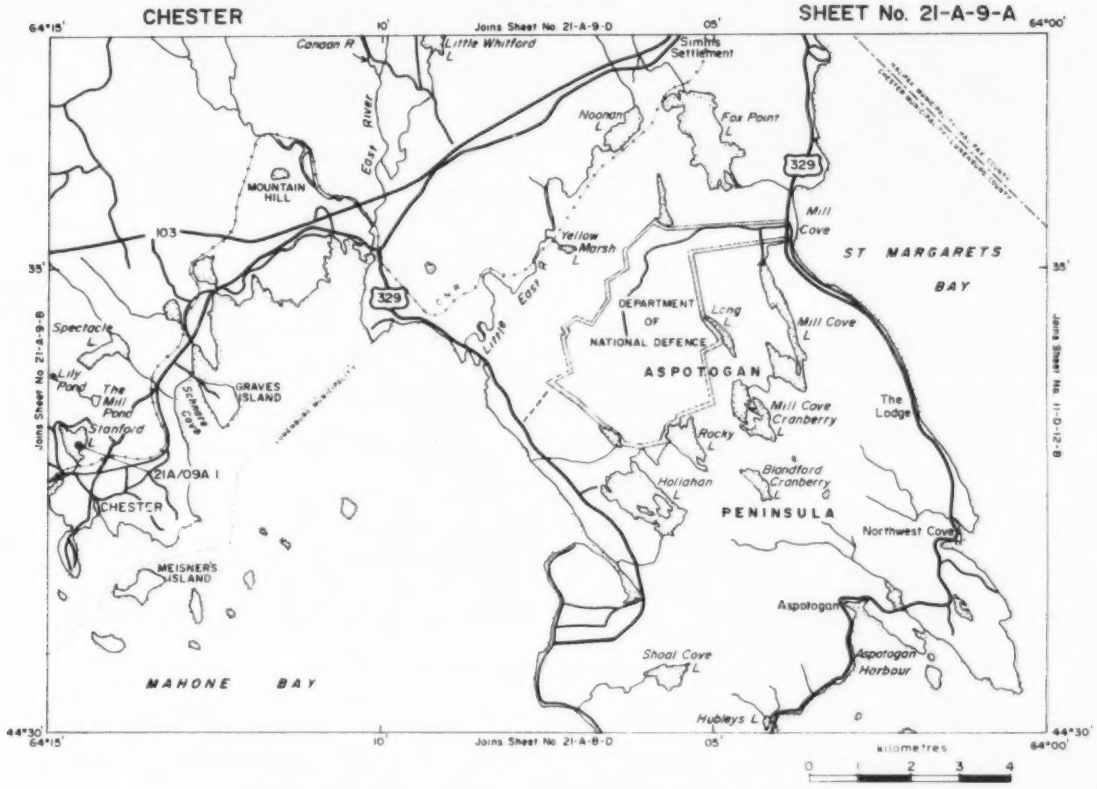

Figure 54. Location map for occurrence 21A/09A 1 (Chester)

OCCURRENCE 21A/09B 2
Sabody Pond, Lunenburg County

Location Tracts 74;95 Claims OP;BC
Grid Location 64°17'00" 44°35'55"

Sabody Pond is just north of Route 103, and 2 km east of Route 12 (Fig. 55).

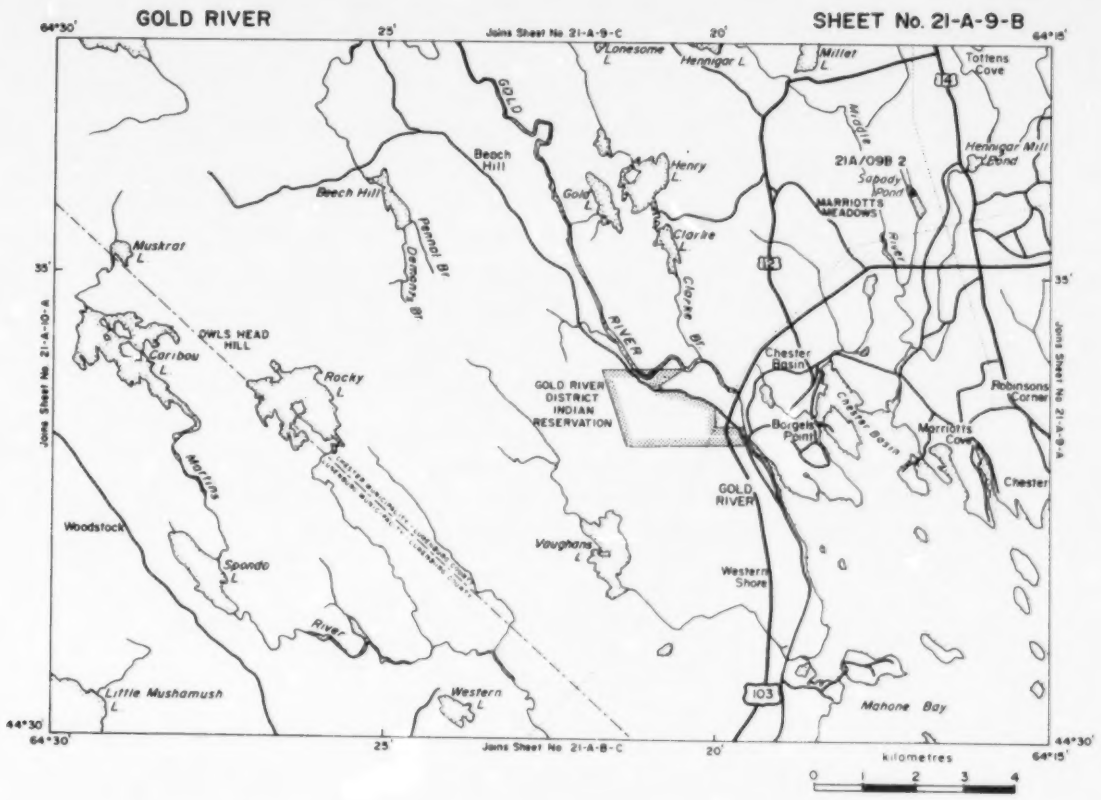

Figure 55. Location map for occurrence 21A/09B 2 (Gold River)

Assessment Small occurrence was reported to be 30-60 cm of good grade, grey-white diatomite near the southern shore of Sabody Pond. Diatoms are well preserved (Eardley-Wilmot, 1928; Nova Scotia Museum, 981).

Analysis (per cent) (Eardley-Wilmot, 1928)

SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	H_2O	CO_2*
85.8	2.74	1.26	-	0.68	3.20	4.64

12 species/22 varieties

21A/10

OCCURRENCE 21A/10D 1
North River, Lunenburg County

Location Tract uncertain Claims
Grid Location

Location of occurrence is uncertain (Fig. 56).

Assessment Occurrence was not investigated. Eardley-Wilmot (1928) listed North River as an occurrence, but no description is available in the literature.

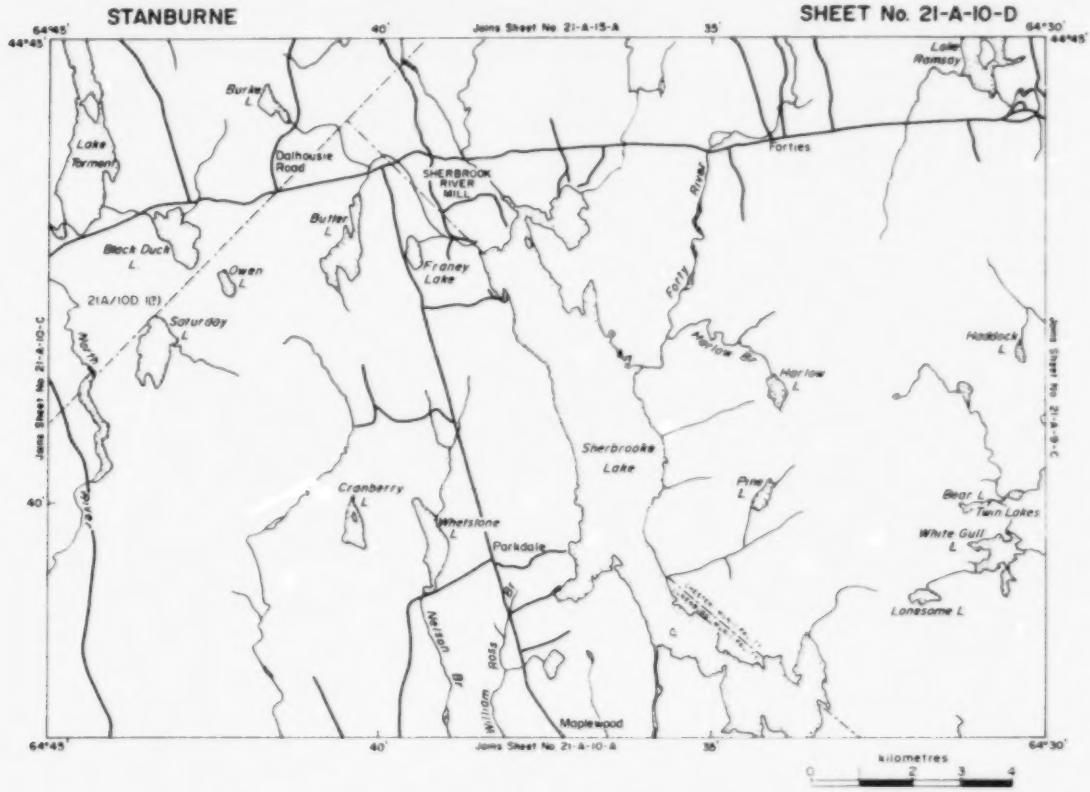

Figure 56. Location map for occurrence 21A/10D 1 (Stanburne)

21A/12

OCCURRENCE 21A/12A 1(*)
Big Bend Deadwater, Digby County

Location Tract 7 Claims BCFGK
Grid Location 65°38'00" 44°30'05"

Big Bend Deadwater is 9 km south of Bear River on the West Branch Bear River and 2 km east of Loud Lake (Fig. 57).

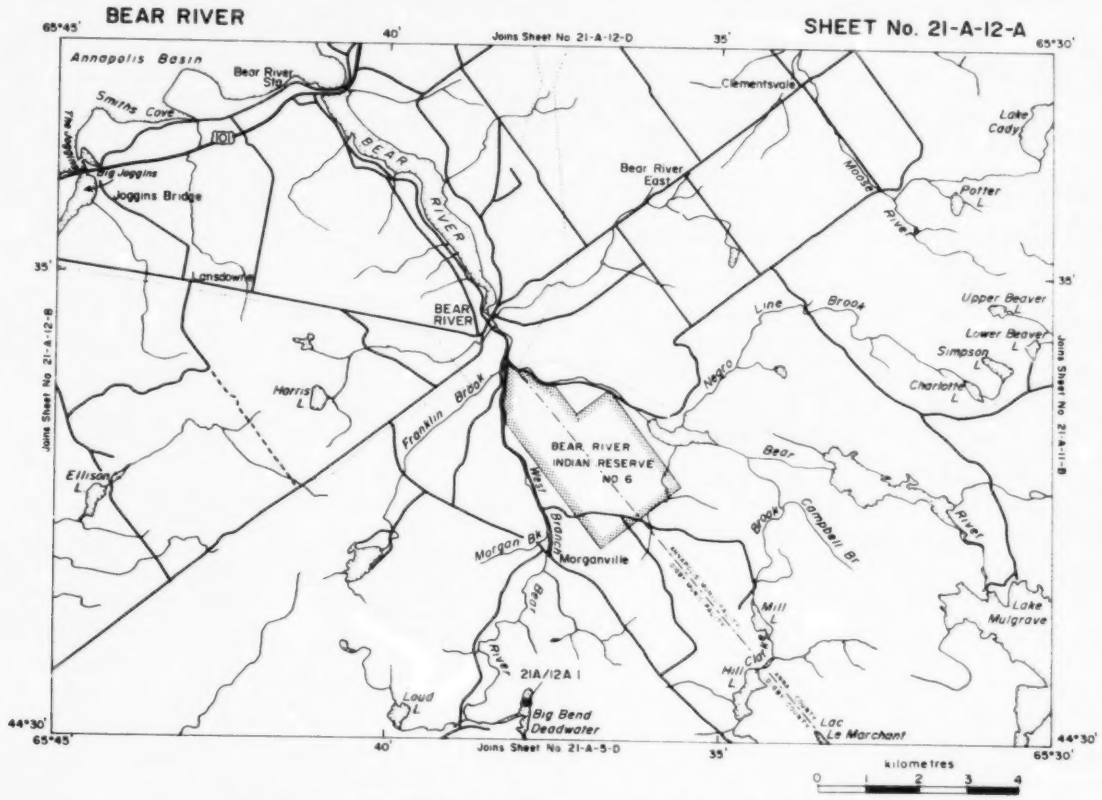

Figure 57. Location map for occurrence 21A/12A 1 (Bear River)

Assessment This deposit was reported first by Burroughs (1929). The diatomite was reported to be relatively unbroken compared to that of Little River, Digby County, and is composed of different species. When calcined the material was pure white and free from iron.

1986 Program Results The sampling program in 1986 involved eight sampling sites, not all of which reached the bottom of the deposit. The diatomite is overlain by 1-2 m of peat and may extend out under the stillwaters of the West Branch Bear River. Under the peat there is estimated to be 275 400 t of soft diatomaceous earth that is dark brown in colour. Deepest portions of the deposit are near the centre of the deposit fairly close to the edge of the River. The presence of the West Branch Bear River flowing through the deposit decreases the possible viability for the development of this resource.

Analysis (per cent) (1986)

SiO_2	Al_2O_3	Total Iron	Oxides	LOI
57.65	3.16	1.39	1.73	34.46

Specific Gravity	2.14
As Received Moisture (%)	78.91
As Received Bulk Density (g/cm^3)	1.04
Ash (%)	63.91

Ash Analysis (per cent)

SiO_2	Al_2O_3	Total Iron	Oxides
90.21	4.95	2.17	2.06

21A/14

OCCURRENCE 21A/14C 1
Mount Rose, Annapolis County

Location Tract 25 Claims LK
Grid Location 65°15'30" 44°54'30"

Occurrence is reported to be in a small swamp 1 km southwest of the Mount Rose community centre (Fowler, 1967) (Fig. 58).

Assessment This occurrence was reported to be 1.2-1.5 m thick in a small swamp (Fowler, 1967).

1986 Program Results Recent investigation into this occurrence failed to locate the diatomaceous earth. Material found in the swamp was found to be a soft, grey-white clay. A second swamp on the same property contained similar material.

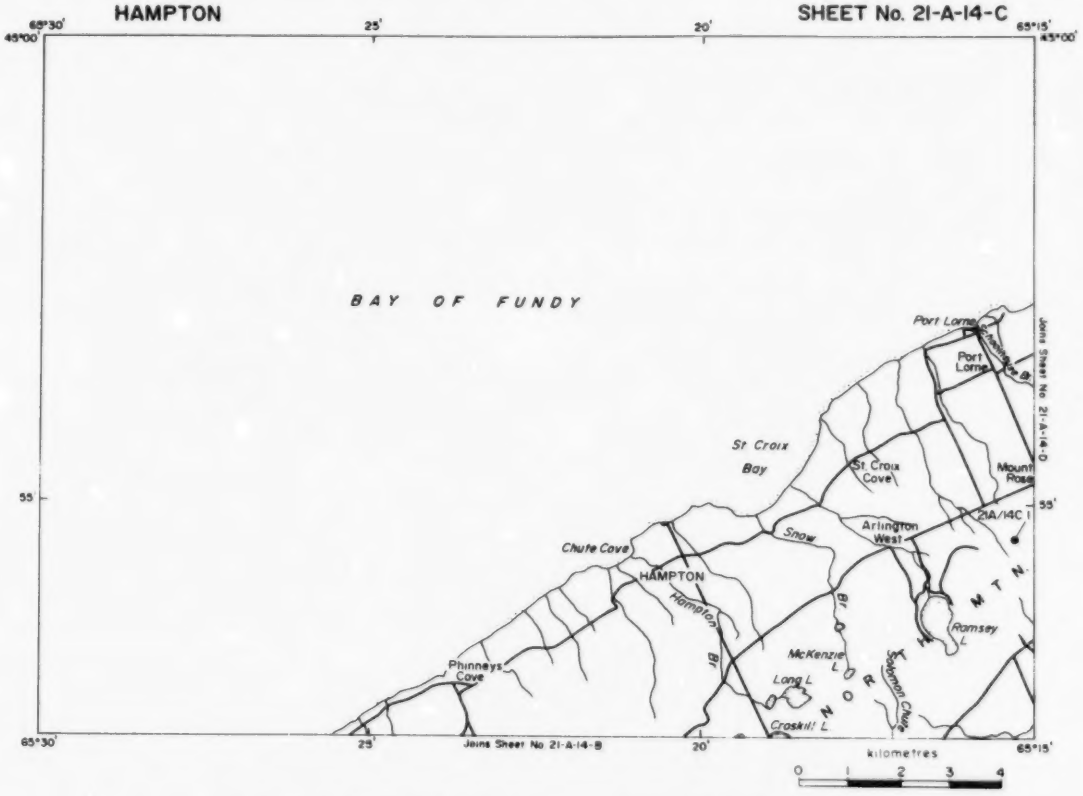

Figure 58. Location map for occurrence 21A/14C 1 (Hampton)

OCCURRENCE 21A/14D 2
Victoria Vale, Annapolis County

Location Tract 100 Claims OP
Grid Location 65°04'00" 44°59'50

Messervey (1926) listed Victoria Vale as an occurrence.

Assessment Occurrence was listed in Messervey (1926), but no description was given. Occurrence was not found; site has been bulldozed and turned into a pond for a campground (Fig. 59).

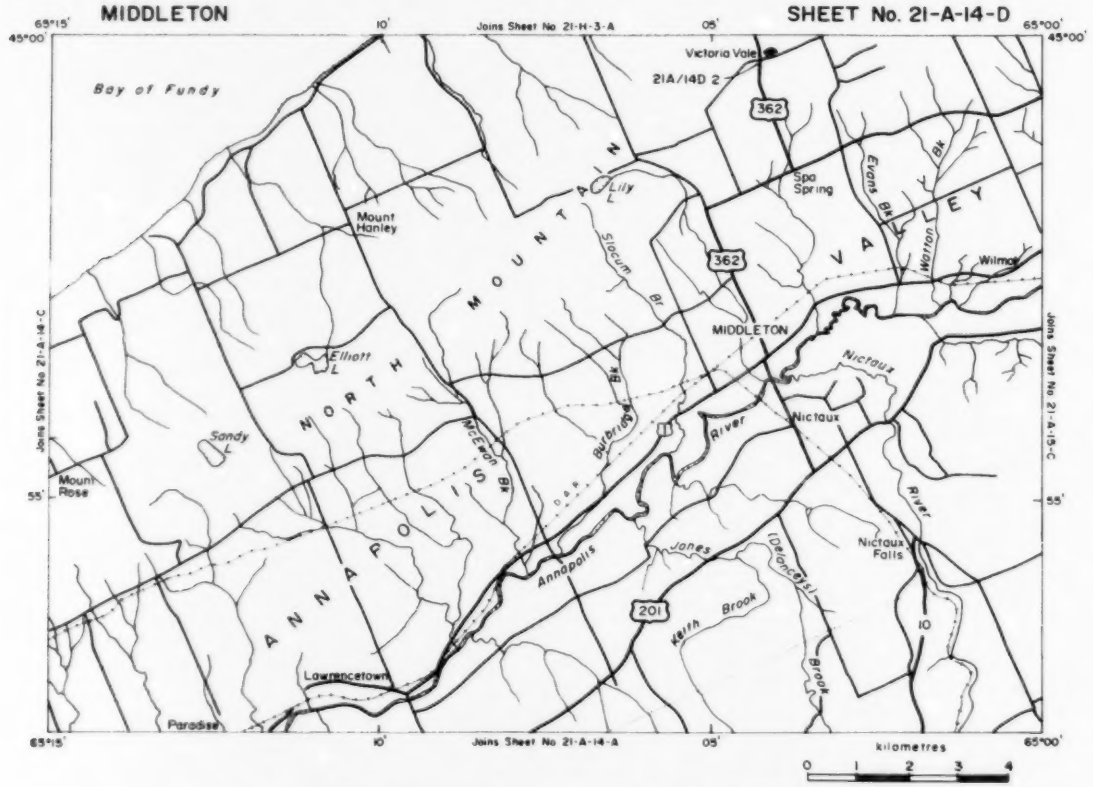

Figure 59. Location map for occurrence 21A/14D 2 (Middleton)

21A/15

OCCURRENCE 21A/15B 1
Donnellan Stillwaters, Annapolis County

Location Tract 20 Claims CEFMLNO
Grid Location 64°51'00" 44°46'20"

The occurrence was found near Donnellan Stillwaters in the marshes along the banks of the Shell Camp Stream (Rhodenizer, personal communication, 1987) (Fig. 60).

Assessment Occurrence was not investigated.

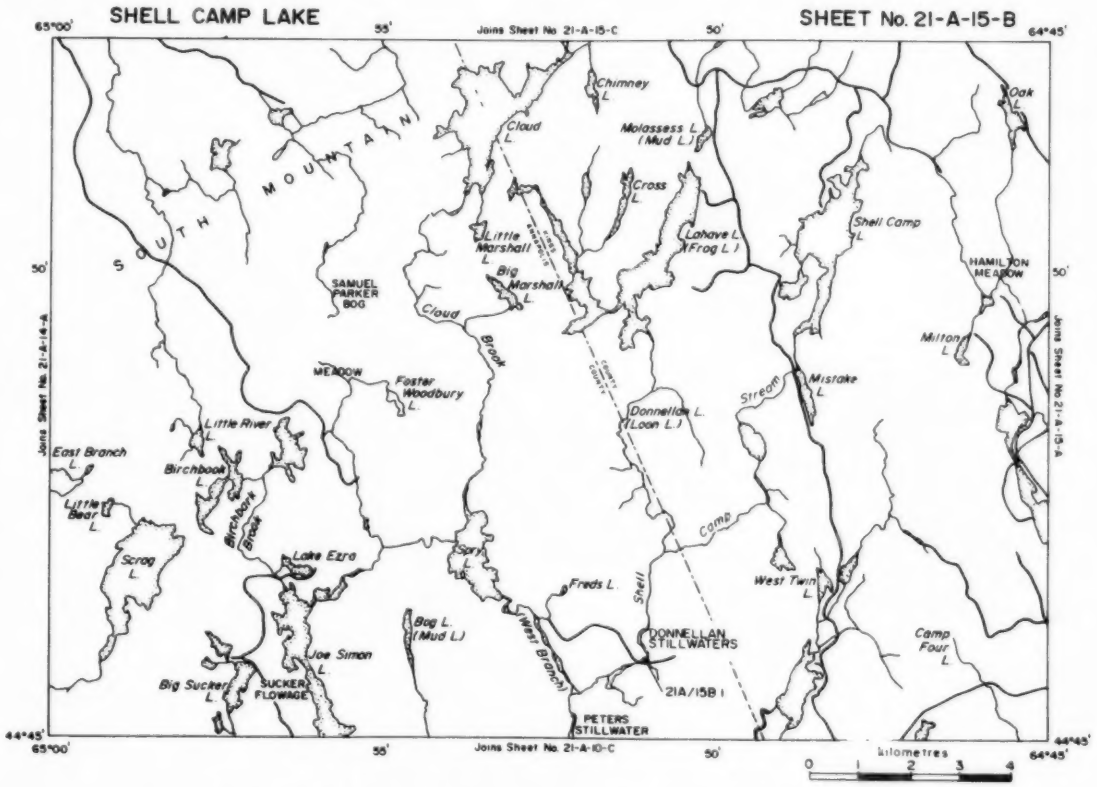

Figure 60. Location map for occurrence 21A/15B 1 (Shell Camp Lake)

OCCURRENCE 21A/15C 2
Factorydale, Kings County

Location Tract uncertain Claims
Grid Location

Occurrence was reported to be in a bog on the northern side of the road leading to Randalls Lake from Factorydale (Faribault, 1921; Eardley-Wilmot, 1928) (Fig. 61). Note there are two locations indicated on Figure 61. The reported occurrence fits both locations.

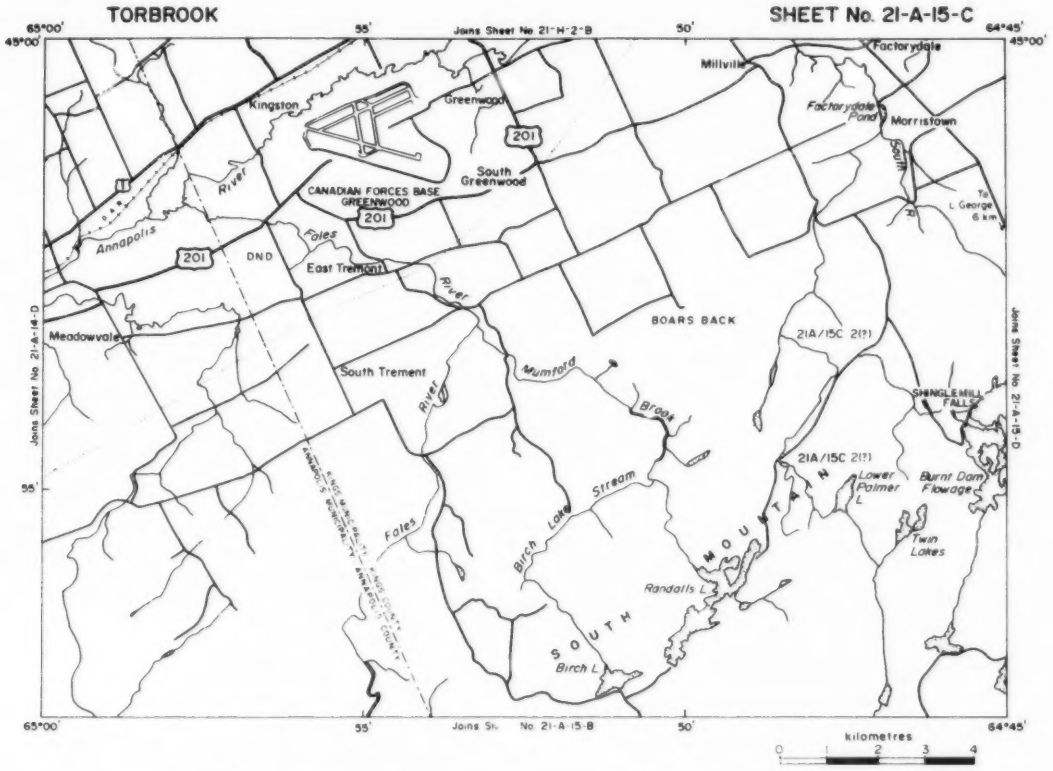

Figure 61. Location map for occurrence 21A/15C 2 (Torbrook)

Assessment Occurrence was not investigated. Reported to occur in the stillwaters and swamps along the South River. Occurrence was reported as 60-90 cm of good, dense, white diatomite in an alder swamp overlain by 60 cm of peat and estimated to be 0.8-1.2 ha in area (Eardley-Wilmot, 1928).

Analysis (per cent) (Eardley-Wilmot, 1928)

SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	H_2O	CO_2*
76.32	6.34	1.36	-	1.43	9.50	3.0

13 species/31 varieties

OCCURRENCE 21A/15D 3
Horseshoe Meadows, Kings County

Location Tracts 36;37 Claims O;CD
Grid Location 64°44'45" 44°55'00"

Horseshoe Meadows is 0.5 km east of Burnt Dam Flowage. Burnt Dam Flowage is 3.5 km west of the road from Morristown to Lake George and 0.5 km northeast of Twin Lakes (Faribault, 1921) (Fig. 62).

Assessment Occurrence was not investigated. It was reported to be 3 m thick of diatomaceous earth with other deposits in the vicinity (Faribault, 1921).

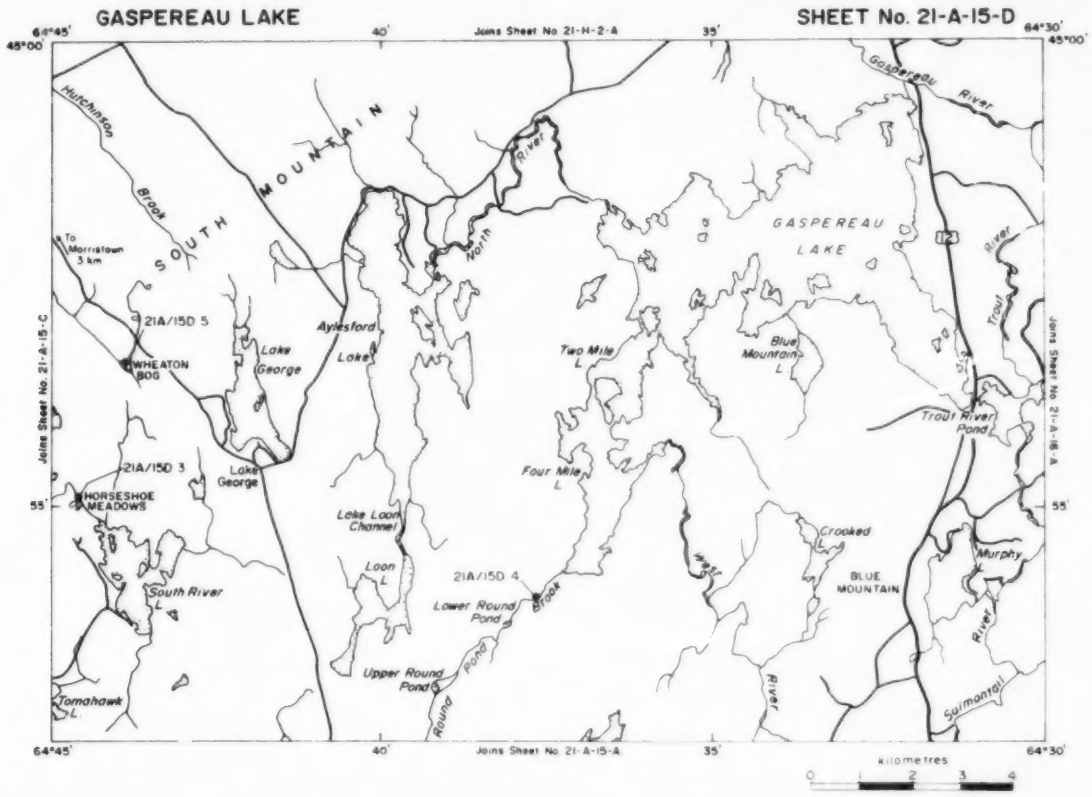

Figure 62. Location map for occurrences 21A/15D 3-5 (Gaspereau Lake)

OCCURRENCE 21A/15D 4
Four Mile Lake, Kings County

Location Tracts 8;18 Claims uncertain
Grid Location

Occurrence was reported to occur near the southern end of Four Mile Lake and about 0.5 km north of Lower Round Pond (Faribault, 1921) (Fig. 62).

Assessment Occurrence was not investigated.

OCCURRENCE 21A/15D 5
Wheaton Bog, Kings County

Location Tract 60 Claims JPQ
Grid Location 64°44'15" 44°56'30"

Wheaton Bog is located 0.5 km west of the road from Morristown to Lake George, about 7 km south of Morristown and 4 km northwest of Lake George (Fig. 62).

Assessment Occurrence was not investigated. It was reported to be extensive, 60-90 cm deep, consisting of mostly sponge spicules and a fair number of diatoms (Nova Scotia Museum, 975).

21A/16

OCCURRENCE 21A/16B 1
Harris Lake, Lunenburg County

Location Tract 35 Claims uncertain
Grid Location

Location of the occurrence was not reported, but it is believed to occur in the meadows along the West Branch Gold River just north of Harris Lake (Faribault and Wright, 1931) (Fig. 63).

Assessment Occurrence was not investigated.

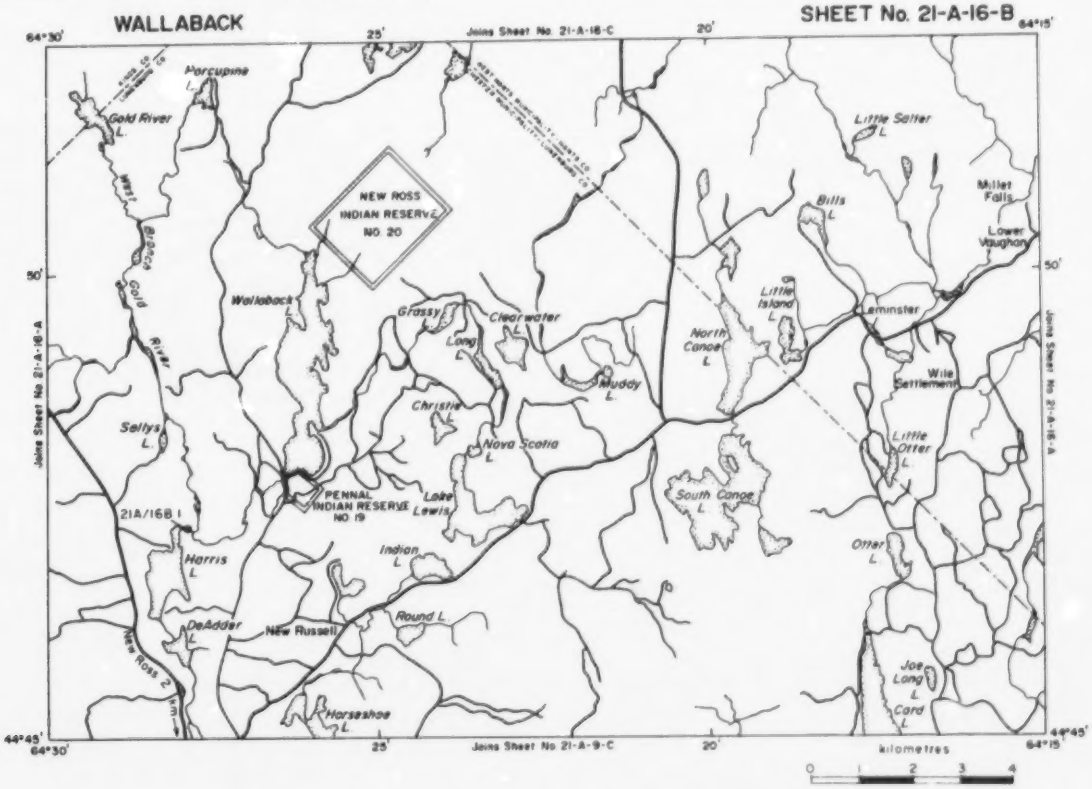

Figure 63. Location map for occurrence 21A/16B 1 (Wallaback)

21B/01

OCCURRENCE 21B/01A 1(•)
Hectanooga Lake, Digby County

Location Tracts 74;95 Claims P;B
Grid Location 66°01'50" 44°05'50"

Hectanooga Lake is behind the fire hall in the Community of Hectanooga, 6 km northeast of Mayflower (Fowler, 1967) (Fig. 64).

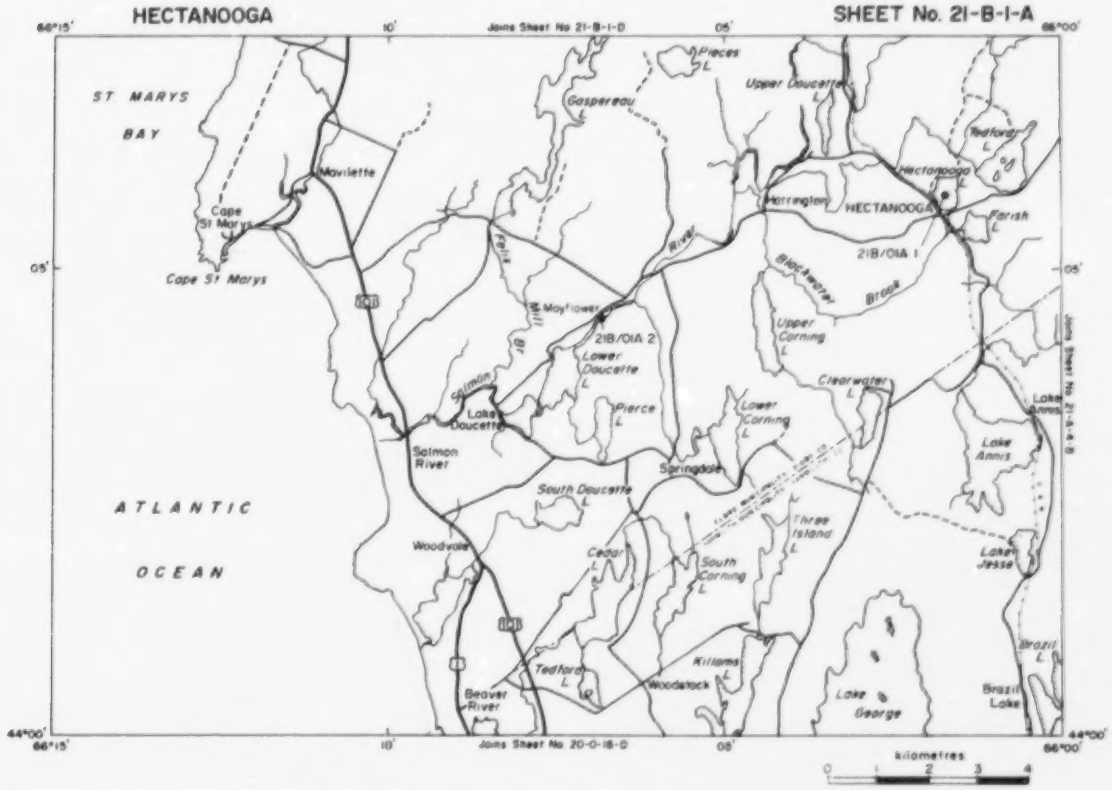

Figure 64. Location map for occurrences 21B/01A 1-2 (Hectanooga)

1987 Program Results No diatomaceous earth was found to occur in or around Hectanooga Lake, however samples collected were analyzed to confirm this. Significant amounts of sawdust and gyttja were found in deep water portions of the Lake. The shallow areas of the Lake are rocky.

Analysis (per cent) (1987)

SiO_2	Al_2O_3	Total Iron	Oxides	LOI
55.91	12.56	4.08	7.02	20.43

Specific Gravity	2.48
As Received Moisture (%)	74.60
As Received Bulk Density (g/cm^3)	1.20
Ash (%)	78.35

Ash Analysis (per cent)

SiO_2	Al_2O_3	Total Iron Oxides
71.57	15.90	5.15 7.38

OCCURRENCE 21B/01A 2
Lower Doucette Lake, Digby County

Location Tract 67 Claims CD
Grid Location 66°07'00" 44°04'10"

This occurrence was reported in meadows along the Salmon River about 0.5 km northeast of Lower Doucette Lake and 0.5 km below the bridge in Mayflower (Eardley-Wilmot, 1928; Messervey, 1926) (Fig. 64).

1987 Program Results Occurrence was investigated, but no evidence of a significant amount of diatomaceous earth was found. Some diatomaceous peat was found to occur near the edge of Salmon River and samples were collected from the bottom of the peat bog nearby. The samples were not analyzed.

OCCURRENCE 21B/01D 3(•)
Salmon River, Digby County

Location Tract 4 Claim H
Grid Location 66°04'00" 44°07'45"

This occurrence is 5 km northwest of Hectanooga, 0.25 km above the bridge on the road between Hectanooga and St. Martin, along the banks of the Salmon River. The bridge is 1 km west of the Canadian National Railway line (Eardley-Wilmot, 1928) (Fig. 65).

Assessment Occurrences along the Salmon River were reported to be gritty and the diatoms were found to be badly broken. Diatomite was reported to be 0.6-1.2 m thick and grey in colour (Eardley-Wilmot, 1928).

Analysis (per cent) (Eardley-Wilmot, 1928)

SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	H_2O	CO_2^+	
68.1	16.55	4.05	1.3	1.81	6.03	0.29	mostly silt and sponge spicules

10 species/20 varieties

1987 Program Results Recent evaluation of this occurrence limits it to a few metres wide on the eastern bank of the Salmon River next to a boat landing.

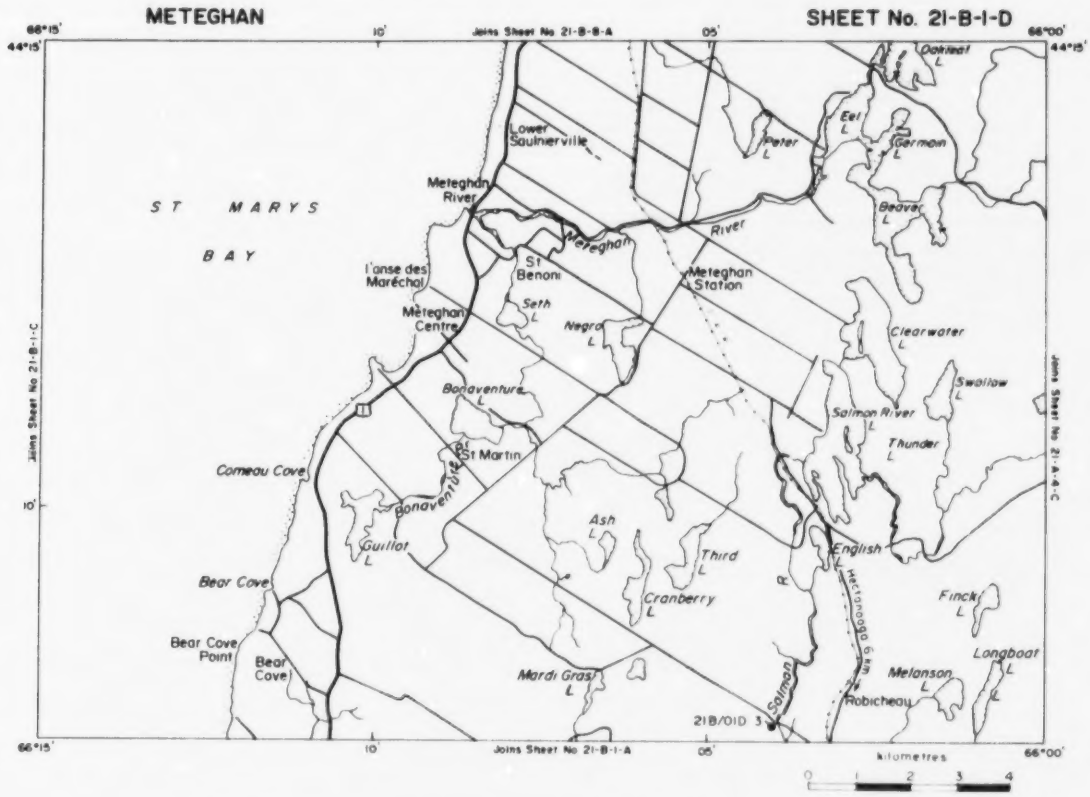

Figure 65. Location map for occurrence 21B/01D 3 (Meteghan)

Analysis (per cent) (1987)

SiO_2	Al_2O_3	Total Iron	Oxides	LOI
62.89	12.42	3.98	8.27	12.44

Specific Gravity	2.48
As Received Moisture (%)	52.63
As Received Bulk Density (g/cm^3)	1.50
Ash (%)	86.56

Ash Analysis (per cent)

SiO_2	Al_2O_3	Total Iron	Oxides
74.24	14.10	4.36	7.30

21B/08

OCCURRENCE 21B/08A 1
Concession, Digby County

Location Tract 26 Claims uncertain
Grid Location

The reported occurrence is believed to be 3 km east of Concession beneath a flooded bog, 0.5 km north of the paved road between Concession and St. Joseph (Messervey, 1926) (Fig. 66).

Assessment The bog was not investigated. The site has been flooded as a Waterfowl Production Site.

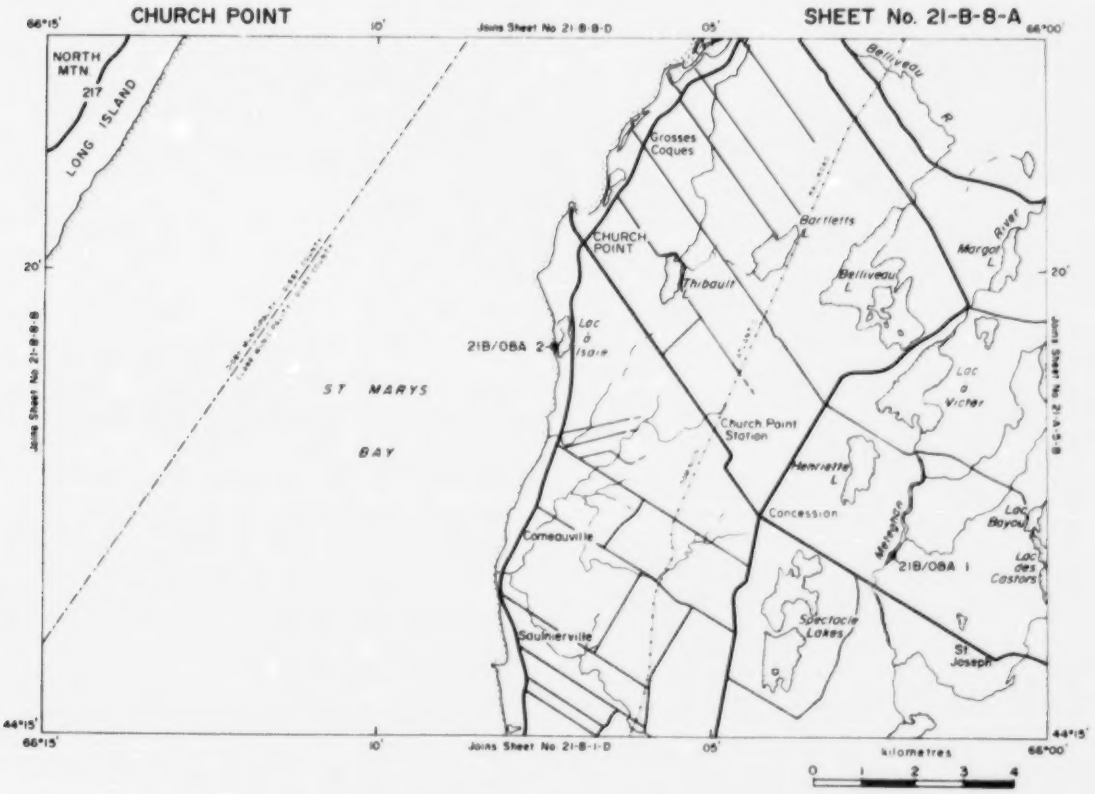

Figure 66. Location map for occurrences 21B/08A 1-2 (Church Point)

OCCURRENCE 21B/08A 2
Lac à Isaie, Digby County

Location Tracts 54;67 Claims uncertain
Grid Location

Lac à Isaie is behind the berm of the beach in Church Point (Nova Scotia Department of Mines and Energy, IMOD# 21B/08-03; Messervey, 1926) (Fig. 66).

Assessment Occurrence was not investigated. It was listed as an occurrence by Messervey (1926).

OCCURRENCE 21B/08B 3(•)
Central Grove, Digby County

Location Tracts 73;96 Claims GJPQ;A
Grid Location 66°15'30" 44°20'45"

The deposit is located on the southeastern side of Route 217 on Long Island, 6 km south of Tiverton (Nova Scotia Department of Mines and Energy, IMOD# 21B/08-08) (Fig. 67).

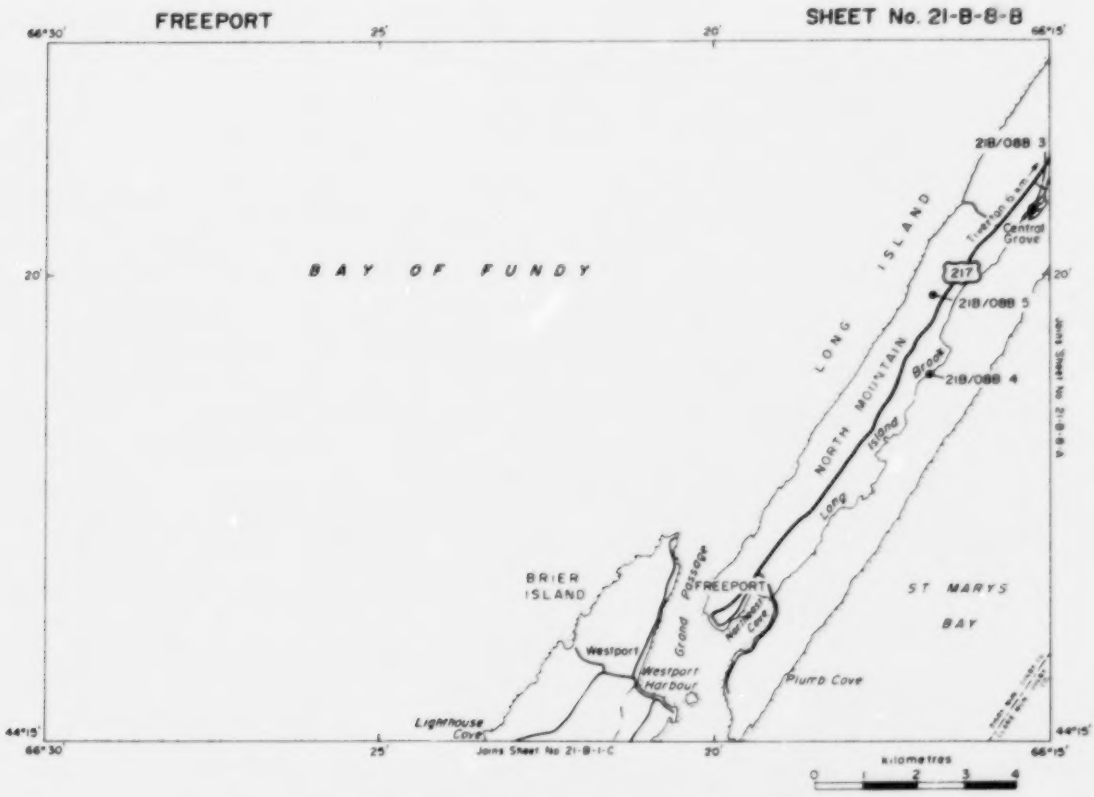

Figure 67. Location map for occurrences 21B/08B 3-5 (Freeport)

Assessment Early assessment reports described this deposit as one of the largest in Nova Scotia (Eardley-Wilmot, 1928). The resource was reported to be about 30 ha in area within a 45 ha bog lying in a longitudinal basin near the centre of Long Island. It was reported to have 1.6 million m^3 of material which could yield 312 000 t of diatomite. The best material was found between 1.8-2.4 m depth (Foran, 1950).

Analysis (per cent) (Foran, 1950)

Crude/calcined ratio	10:1
Density	12.5 lbs/ft^3

SiO_2 (%)	Al_2O_3 (%)	Fe_2O_3 (%)	Depth (ft)	Diatomite (%)	Organics (%)	Sand (%)	Clay (%)
67.1	4.5	1.2	4	28.5	43.3	4.32	22.5
79.2	3.3	0.8	8	31.3	26.7	5.65	33.6
72.3	4.0	2.0	12	36.9	8.9	25.80	25.2

1986 Program Results The diatomaceous earth found in this deposit occurs beneath 2.5-3.5 m of peat overburden. The diatomaceous earth is dark brown ranging in thickness from 1-2.5 m. This material overlies 2 m or more of a dark grey-green diatomaceous sediment that extends to the underlying sand approximately 3-5 m beneath the surface of the bog. Three large ponds in the centre of the bog and the thick peat overburden limit the feasibility of this deposit. Estimates from data collected for this report indicate about 1.6 million m^3 of diatomaceous earth, or 336 000 t of dry diatomite of which 63% (210 000 t) would remain after calcination. This bog has been recommended as an International Biological Preserve (LaRoi and Babb, 1974).

Analysis (per cent) (1986)

SiO_2	Al_2O_3	Total Iron	Oxides	LOI
50.62	5.36	3.21	3.45	36.41

Specific Gravity	2.35
As Received Moisture (%)	80.82
As Received Bulk Density (g/cm^3)	1.08
Ash (%)	62.65

Ash Analysis (per cent)

SiO_2	Al_2O_3	Total Iron	Oxides
80.80	8.56	5.13	5.51

OCCURRENCE 21B/08B 4(*)
Long Island Brook, Digby County

Location Tracts 27;46 Claims P;B
Grid Location 66°18'00" 44°17'24"

This occurrence is a bog 5 km northeast of Freeport on the eastern side of Route 217. The bog can be accessed by following all-terrain vehicle trails across Long Island Brook (Fig. 67).

Assessment This occurrence was reported to cover an area of 7 ha with about 179 000 m^3 of calcined diatomite (34 500 t). The diatomite was reported to be poor grade and high in organic content (Foran, 1950).

1986 Program Results Results from recent investigations of this deposit substantiate the poor grade and high organic content.

Analysis (per cent) (1986)

SiO_2	Al_2O_3	Total Iron	Oxides	LOI
59.36	5.78	2.18	4.48	25.59

Specific Gravity	2.31
As Received Moisture (%)	74.15
As Received Bulk Density (g/cm^3)	1.17
Ash (%)	72.46

Ash Analysis (per cent)

SiO_2	Al_2O_3	Total Iron	Oxides
81.92	7.97	3.88	6.21

OCCURRENCE 21B/08B 5
Tiberts Pond (local name), Digby County

Location Tract 71 Claims PK
Grid Location 66°16'03" 44°19'45"

Tiberts Pond (local name) is 10 km southwest of Tiverton on the western side of Route 217 (Bancroft, 1947) (Fig. 67).

Assessment Occurrence was not investigated. The deposit was reported to be located in a pond 2.8 ha in area and has been estimated to have 91 000 m^3 of low grade brown to grey diatomite (Foran, 1950).

OCCURRENCE 21B/08D 6(•)
East Ferry, Digby County

Location Tracts 16;33 Claims N;CDF
Grid Location 66°10'54" 44°24'04"

This bog is on the eastern side of Route 217, about 3 km northeast of East Ferry (Nova Scotia Department of Mines and Energy, IMOD# 21B/08-10) (Fig. 68).

Assessment Occurrences were reported to have approximately 216 000 m^3 of diatomaceous earth in the 18 ha bog (Foran, 1950).

1987 Program Results Assessment work carried out recently shows that this resource is mostly peat. Diatomaceous material found in the bogs was at great depth (4.2 m) and of poor grade.

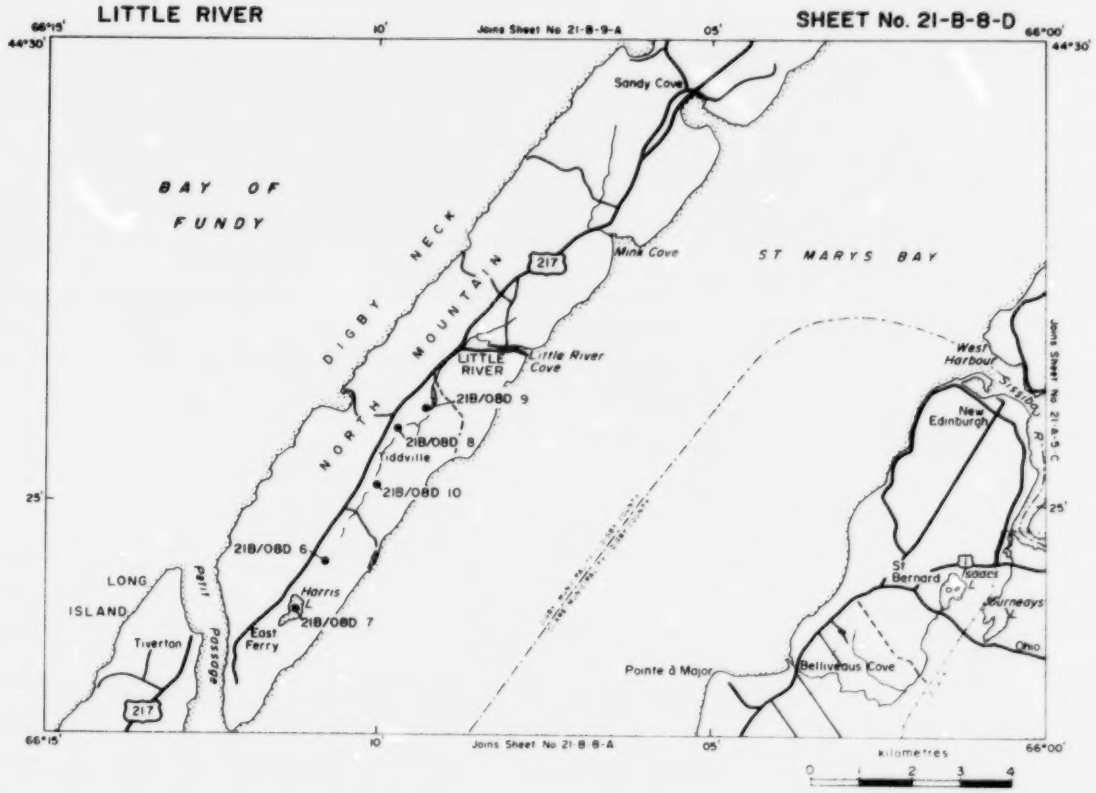

Figure 68. Location map for occurrences 21B/08D 6-10 (Little River)

OCCURRENCE 21B/08D 7(•)
Harris Lake, Digby County

Location Tracts 15;16 Claims HJQ;EMN
Grid Location 66°11'30" 44°23'50"

The deposit is found beneath 1.5 m of water in Harris Lake. Harris Lake is about 1 km east of the ferry terminus at East Ferry on Digby Neck (Bancroft, 1947; Nova Scotia Department of Mines and Energy, IMOD# 21B/08-09) (Fig. 68).

Assessment This deposit was reported to cover an area of 16 ha (Foran, 1950). Harris Lake was originally a bog with a small pond towards its eastern end; it is now a lake because of the construction of a coffer dam at its western end. The deposit has been estimated to be about 673 000 m^3 which could yield approximately 133 000 t of dry finished product. The diatomite was reported to reach 9 m in the deepest part of the deposit (Foran, 1950).

Analysis (per cent) (Foran, 1950)

Crude/calcined ratio	10:1
Density	13 lbs/ft^3
Colour	buff to creamy white - (calcined)

Depth (m)	SiO_2 (%)	Al_2O_3 (%)	Fe_2O_3 (%)
1.2	67.0	4.3	7.1
2.4	81.0	2.8	0.8
3.65	65.7	10.0	1.2

1986 Program Results Recent investigation of this deposit indicates that reserves are less than estimated in earlier references. Diatomaceous earth occurs beneath an average of 1.3 m of water and an average of 1.5 m of peat. The diatomaceous earth was found to reach over 7 m in thickness. Reserve calculations based on data from this survey indicate about 393 000 t of diatomaceous material with an average wet bulk density of 1030 kg/m^3. As received moisture was found to be approximately 86% which, when removed, would indicate 55 000 t of dry crude in situ. Calcining this material would leave 35 200 t of diatomite, however the large volume of low quality peat overburden, the great depth of this deposit and the reduced recovery (high organics) potential would tend to not make this deposit a feasible venture.

Analysis (per cent) (1986)

SiO_2	Al_2O_3	Total Iron	Oxides	LOI
56.35	3.71	1.67	2.26	33.55

Specific Gravity	2.19
As Received Moisture (%)	86.15
As Received Bulk Density (g/cm^3)	1.03
Ash (%)	63.98

Ash Analysis (per cent)

SiO_2	Al_2O_3	Total Iron	Oxides
88.08	5.79	2.61	3.49

OCCURRENCE 21B/08D 8(•)
Little River (Factory Bog), Digby County

Location Tracts 41;56 Claims NO;DC
Grid Location 66°09'30" 44°26'15"

This occurrence is known as Factory Bog. It is located on the eastern side of Route 217 between Little River and Tiddville on Digby Neck (Eardley-Wilmot, 1928; Bancroft, 1947; Nova Scotia Department of Mines and Energy, IMOD# 21B/08-6) (Fig. 68).

Assessment This deposit is perhaps the largest mineable deposit in the Province. The diatomaceous earth ranges from 2.4-4.5 m in depth under a thin layer of peat overburden. Originally the area was a bog, however in recent decades mining activities and beavers have changed it into a shallow lake. The deposit was mined sporadically between 1917 and 1955 producing 5556 t of diatomite. It was reported that there are 123 000 t remaining (Foran, 1950). The deposit was reported to be 20 ha in size with 644 000 m^3 of material in situ (Foran, 1950).

Analysis (per cent) (Eardley-Wilmot, 1928)

SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	H_2O	CO_2^+	
43.5	1.97	0.63	0.20	0.36	19.21	33.79	crude (1.2 m)
84.0	4.92	3.48	2.20	1.38	2.21	0.59	calcined
82.7	2.09	1.11	0.86	0.88	9.20	1.92	1.5-3.4 m
94.1	2.04	1.55	0.86	0.28	0.14	0.42	calcined
79.1	7.14	1.16	-	-	12.10	0.90	3-6 m

Analysis (per cent) (Foran, 1950)

Depth (m)	SiO_2 (%)	Al_2O_3 (%)	Fe_2O_3 (%)
1.2	75	4	0.7
2.4	80	4	1.0
3.65	65	3	1.6

1986 Program Results Evaluation of this deposit sampled 13 sites to determine the average depth of the deposit, thickness of overburden, and the quality of diatomaceous earth remaining in the bog. Results indicate an average of 2.2 m of fairly organic diatomaceous earth beneath 1 m of peat. The water level in the flooded portions of the deposit varies from a few centimetres to over 2 m in the areas mined by the original dragline. Approximately 396 000 m^3 of crude diatomaceous earth has been delineated in this deposit indicating 415 800 t of wet crude. Samples of the crude material average around 82% moisture indicating 73 200 t of dry crude in situ. Analysis of the dry samples indicates an average of 73% ash or calcined diatomite approximately equivalent to 53 400 t of finished crude reserves in situ.

Analysis (per cent) (1986)

SiO_2	Al_2O_3	Total Iron	Oxides	LOI
62.95	4.74	2.49	2.67	25.95

Specific Gravity	2.19
As Received Moisture (%)	82.42
As Received Bulk Density (g/cm^3)	1.05
Ash (%)	72.85

Ash Analysis (per cent)

SiO_2	Al_2O_3	Total Iron	Oxides
86.41	6.51	3.42	3.65

OCCURRENCE 21B/08D 9
Little River, Digby County

Location Tract 56 Claims BG
Grid Location 66°09'05" 44°26'00"

This small deposit is located about 0.5 km northeast of the occurrence known as Factory Bog (21B/08D 8) (Fig. 68).

Assessment Occurrence was not investigated. It was reported to be about 7 ha in size containing 181 000 m^3 which could yield 34 500 t dry finished product. The best diatomaceous material was found to be between 1 and 3 m (Foran, 1950).

Analysis (per cent) (Foran, 1950)

Crude/Calcined ratio	8:1
Density	14 lbs/ft^3
Colour	buff

OCCURRENCE 21B/08D 10
Tiddville, Digby County

Location Tracts 40;41 Claims AH;E
Grid Location 66°10'10" 44°25'30"

This small valley bottom bog is located 0.75 km southwest of the Little River (Factory Bog) occurrence (21B/08D 8) in Tiddville (Nova Scotia Department of Mines and Energy, IMOD# 21B/08-12) (Fig. 68).

Assessment Occurrence was not investigated. It was reported to be 8.5 ha in size having about 291 000 m^3 of diatomaceous material which could yield 55 300 t of dry finished product. The best diatomaceous material was reported to be found between 2.4 m and bottom (Foran, 1950).

Analysis (per cent) (Foran, 1950)

Crude/calcined ratio	6:1
Density	11 lbs/ft^3
Colour	buff

21H/02

OCCURRENCE 21H/02B 1
Kirk Brook, Kings County

Location Tract 65 Claims uncertain
Grid Location

Location is uncertain (Fig. 69).

Assessment Occurrence was not investigated. The occurrence was reported to be very small, but of good quality with well preserved diatoms (Faribault, 1921). It was reported to be in a swamp up to 6 m deep. The diatomite was reported to be grey white with few organics (Eardley-Wilmot, 1928).

Analysis (per cent) (Eardley-Wilmot, 1928)

SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	H_2O	CO_2*
82.0	2.57	0.63	-	-	13.8	0.20

9 species/23 varieties

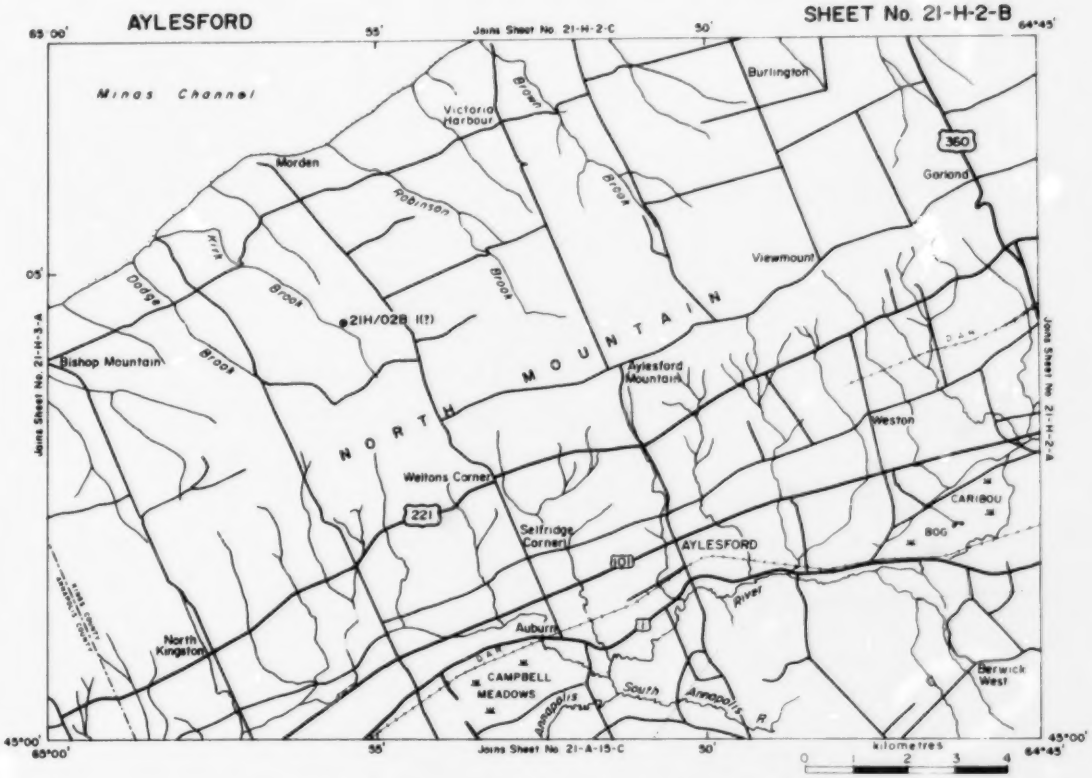

Figure 69. Location map for occurrence 21H/02B 1 (Aylesford)

21H/03

OCCURRENCE 21H/03A 1(•)
Margaretsville, Annapolis County

Location Tract 21 Claims EM
Grid Location 65°04'55" 45°01'17"

Occurrence is located on the northern side of Route 362 from Victoria Vale to Margaretsville, about 0.5 km northeast of the Margaretsville Elementary School (Fowler, 1967) (Fig. 70).

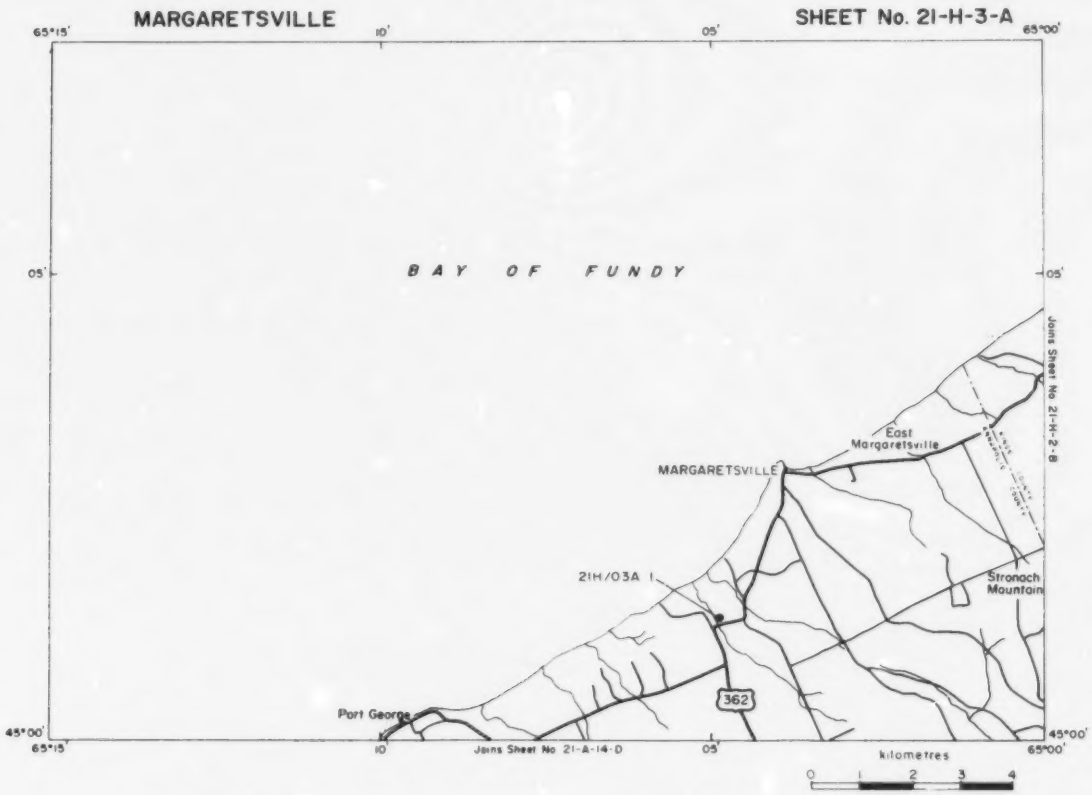

Figure 70. Location map for occurrence 21H/03A 1 (Margaretsville)

1987 Program Results The Fundy Cranberry Bog at Margaretsville is covered with about 20-30 cm of sand used in cranberry propagation. Underneath the sand is 10-20 cm of peat and 30-60 cm of a dark grey to brownish-grey diatomaceous earth. Where Route 362 crosses the bog, about 20 cm of a pure white diatomaceous earth can be found, however it is very local. The southern side of this Bog is flooded as a wildlife preserve. About 4500 m^3 of diatomaceous earth is believed to occur in this location.

Analysis (per cent) (1987)

SiO_2	Al_2O_3	Total Iron	Oxides	LOI
75.35	7.45	1.58	4.58	11.04

Specific Gravity	2.11
As Received Moisture (%)	54.45
As Received Bulk Density (g/cm^3)	1.32
Ash (%)	88.17

Ash Analysis (per cent)

SiO_2	Al_2O_3	Total Iron	Oxides
85.40	8.51	1.80	4.29

21H/09

OCCURRENCE 21H/09A 1
Leamington Brook, Cumberland County

Location Tract 50(?) Claims uncertain
Grid Location

Approximate location is shown on Figure 71 (Eardley-Wilmot, 1934).

Assessment Occurrence was not investigated. The area is currently the Springhill Water Supply. Occurrence has been reported to be small and very pure (Eardley-Wilmot, 1934).

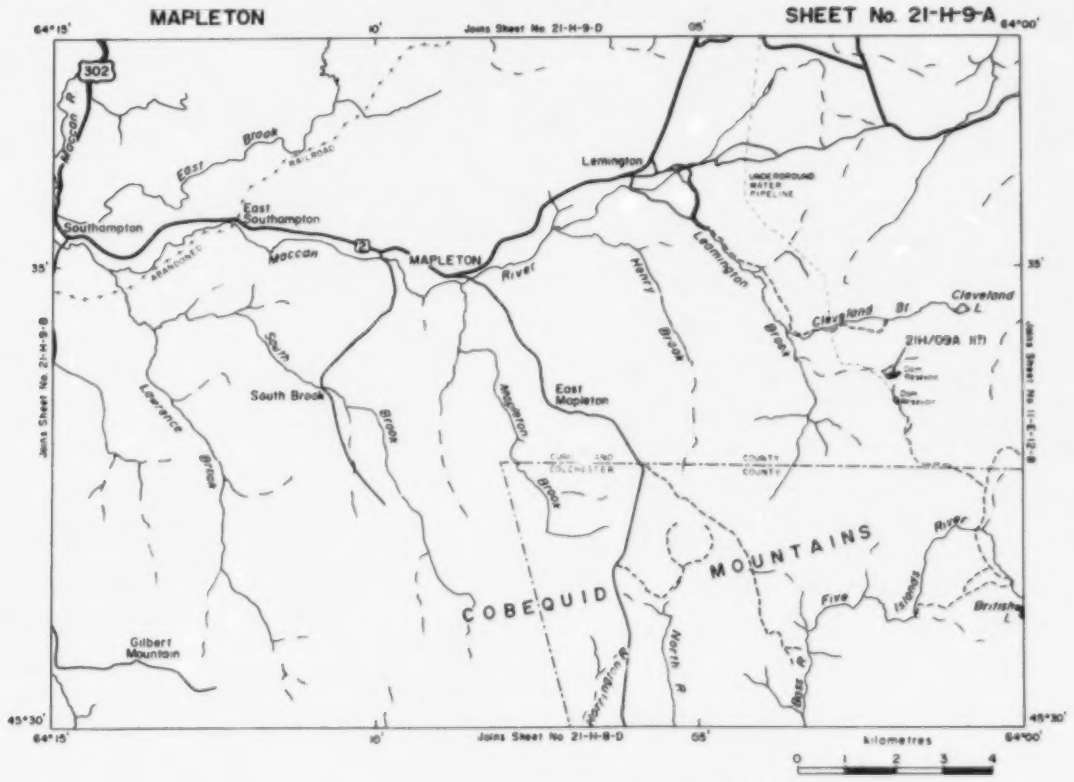

Figure 71. Location map for occurrence 21H/09A 1 (Mapleton)

ACKNOWLEDGMENTS

This project was funded through the Canada-Nova Scotia Mineral Development Agreement under the direction of J. Fowler, Senior Geologist, Nova Scotia Department of Mines and Energy. Special thanks for the able field assistance of P. Rose and D. Bennett. Thanks also to Dr. J. G. Ogden for the use of the boat, G. F. Wightman of Smiths Cove, Digby County, and R. Kennedy of Tatamagouche, Colchester County, for the informative sessions on the history of diatomite mining in Nova Scotia. Historical information was also gathered from miscellaneous documents available through the Colchester Historical Society.

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APPENDIX 1.

SIGNIFICANT OCCURRENCES OF DIATOMACEOUS EARTH IN NOVA SCOTIA

APPENDIX 1.
SIGNIFICANT OCCURRENCES OF DIATOMACEOUS EARTH IN NOVA SCOTIA

Occurrence	Map Number	Estimated Reserves (In Situ) (wet crude) tonnes	(dry sintered) tonnes	% Ash	% SiO_2 (dry weight)	Remarks
McQuade Lake, Halifax County	11D/12D 1	980	250	83.81	85.97	small bog on northeastern side of Lake; some diatomite found throughout the Lake
Gamble Lake, Colchester County	11E/05C 2	12 100	3 500	83.20	93.72	small pond, easily accessed, potentially drainable
Brora Lake, Pictou County	11E/08C 1	383 700	61 000	76.62	91.23	one of the largest occurrences in the Province, currently under NSDME closure
Robinsons Lake, Pictou County	11E/09A 3	145 400	11 500	68.49	90.82	there is a home by the Lake
Taylors Lake, Colchester County	11E/11A 1A	33 300	4 080	70.50	91.06	small pond, seasonally dries up, easily drained
Conkey Pond (local name), Colchester County	11E/11B 9	1 800	810	91.84	96.80	dense white diatomite up to 0.6 m in thickness
Chiganois River, Colchester County	11E/11B 19	39 430	5 100	68.42	94.44	small stream side occurrences, not all accessible because of current NSDME closure
Trout Lake, Colchester County	11E/11B 20	265 300	36 600	72.55	92.93	large Lake, popular recreation area
Newfound Lake (Zone A), Cumberland County	11E/12A 6	15 500	5 200	89.01	93.70	popular recreation area
Sutherland Lake, Cumberland County	11E/12A 9	45 900	17 300	86.17	87.86	popular recreation area, many summer homes
Webbs Lake, Cumberland County	11E/12A 10	21 300	6 800	84.26	93.41	very good potential for extraction of reserves
Fountain Lake, Cumberland County (includes Zone C below)	11E/12B 14	284 510	44 700	78	93.5	this Lake is a popular recreation area with many summer homes; very large, unfeasible to drain
Fountain Lake, Cumberland County (cove, Zone C)	11E/12B 14	4 300	1 400	88.99	97.04	it may be possible to isolate this small cove from the rest of the Lake
Lily Pond, Colchester County	11E/12B 16	38 500	4 040	75.84	95.39	small Pond appears easily accessed and drained; only 20% volume is dense white diatomite
McCuishs Lake, Cape Breton County	11G/13C 2	7 200	1 823	77.92	91.38	remarkably pure diatomite around this accessible Lake

Occurrence	Map Number	Estimated Reserves (In Situ) (wet crude) tonnes	(dry sintered) tonnes	% Ash	% SiO_2 (dry weight)	Remarks
Big Bend Deadwater, Digby County	21A/12A 1	275 400	37 100	63.91	90.21	very thick occurrence, subject to to seasonal flooding
Harris Lake, Digby County	21B/08D 7	393 000	35 200	63.98	88.08	large amount of peat overburden, berm at western end of Lake has flooded original bog
Little River (Factory Bog), Digby County	21B/08D 8	415 800	53 400	72.85	86.41	once mined for diatomite, a large amount of material remains in the deposit

APPENDIX 2.

ALPHABETICAL LIST OF DIATOMACEOUS EARTH OCCURRENCES BY COUNTY NAMES IN NOVA SCOTIA

APPENDIX 2.
ALPHABETICAL LIST OF DIATOMACEOUS EARTH OCCURRENCES BY COUNTY NAMES IN NOVA SCOTIA

ANNAPOLIS COUNTY

Donnellan Stillwaters	21A/15B 1
Margaretsville	21H/03A 1
Mersey River	21A/06D 2
Mount Rose	21A/14C 1
Victoria Vale	21A/14D 2

ANTIGONISH COUNTY

Camerons Lakes	11E/09A 1
St. Josephs Lake	11E/09A 2

CAPE BRETON COUNTY

Boisdale	11K/02A 1
Grand Lake	11G/13C 1
MacEachern Lake	11F/16C 1
McCuishs Lake	11G/13C 2
Mountain Lake	11F/16C 2

COLCHESTER COUNTY

Ben Lake	11E/07C 1
Big Snare Lake	11E/11B 17
Big Snare Lake	11E/11B 17A
Big Totten Lake	11E/11B 4
Black Lake	11E/11B 5
British Lake	11E/12B 13
Chain Lakes	11E/11B 10
Chiganois River (Stillwater Bog #1)	11E/11B 19
Chiganois River (Stillwater Bog #2)	11E/11B 19A
Clark Lake	11E/11B 6
Clear Lake	11E/11B 7
Clear Lake Bog	11E/11B 8
Conkey Pond (local name)	11E/11B 9
Debert Lake	11E/11B 11
Earltown Lake	11E/11A 1
Economy Lake	11E/05C 1
Farm Lake	11E/11B 12
Folly Lake	11E/12A 1
Folly Lake Meadows	11E/12A 2
Gamble Lake	11E/05C 2
Gards Pond	11E/11B 13
Gully Lake	11E/11A 2
Hart Lake	11E/12A 3
Irvine Lake	11E/11B 14
Lily Pond	11E/12B 16
Little Bass River	11E/05C 3
Little Snare Lake	11E/11B 18
Lockerby Pond (local name)	11E/11B 15
MacIntosh Lake	11E/11A 3
Moose Lake	11E/12B 17
Silica Lake (Rhude Pond)	11E/11B 16
Silica Lake	11E/12B 11
Silica Lake Bog	11E/12B 12
Simpson Lake	11E/12B 15
Slack Lake	11E/12A 8
Steele Run	11E/06D 1
Taylors Lake	11E/11A 1A
Trout Lake	11E/11B 20
West Branch Economy River	11E/12B 18
West Lake	11E/12B 19
Whippey Lake	11E/11B 21

CUMBERLAND COUNTY

Dead Lake	11E/12A 5
Dominic Lake	11E/12A 7
Fountain Lake	11E/12B 14
Isaac Lake	11E/12A 4
Leamington Brook	21H/09A 1
Newfound Lake	11E/12A 6
Sutherland Lake	11E/12A 9
Webbs Lake	11E/12A 10

DIGBY COUNTY

Big Bend Deadwater	21A/12A 1
Central Grove	21B/08B 3
Concession	21B/08A 1
East Ferry	21B/08D 6
Harlow Lake	21A/04C 2
Harris Lake	21B/08D 7
Hectanooga Lake	21B/01A 1
Lac à Isaie	21B/08A 2
Little River (Factory Bog)	21B/08D 8
Little River	21B/08D 9
Long Island Brook	21B/08B 4
Lower Doucette Lake	21B/01A 2
Salmon River	21B/01D 3
Snare Lake	21A/04B 1
Tiberts Pond (local name)	21B/08B 5
Tiddville	21B/08D 10

GUYSBOROUGH COUNTY

Lochaber Lake	11E/08D 6

HALIFAX COUNTY

Caribou Lake	11D/11C 1
McQuade Lake	11D/12D 1
Paint Lake	11D/14A 1
Russell Lake	11D/12D 2
Sandy Cove	11D/13D 1

INVERNESS COUNTY

Ashfield	11F/14D 2
River Denys	11F/14A 1

KINGS COUNTY

Factorydale	21A/15C 2
Four Mile Lake	21A/15D 4
Horseshoe Meadows	21A/15D 3
Kirk Brook	21H/02B 1
Wheaton Bog	21A/15D 5

LUNENBURG COUNTY

Harris Lake	21A/16B 1
North River	21A/10D 1
Sabody Pond	21A/09B 2
Stanford Lake	21A/09A 1

PICTOU COUNTY

Beaver River (Findlays Meadows)	11E/09A 3A
Black Brook Lake	11E/08D 4
Black Lake	11E/08C 2
Brora Lake	11E/08C 1
Calder Lake	11E/07D 2
Eden Lake	11E/08C 3
Forbes Lake	11E/07D 3
Grant Lake	11E/07D 4
Haggarts Lake	11E/08D 5
Indian Lake	11E/09A 4
Laggan	11E/09B 7
MacKay Lake	11E/08D 7
MacLean Lake	11E/07D 5
Middle Barneys River	11E/09B 6
Robinsons Lake (Forbes Lake)	11E/09A 3
Rossfield	11E/09B 5
Toney Lake	11E/10C 1
Welsford	11E/11D 22

QUEENS COUNTY

Loon Island	21A/06A 1

SHELBURNE COUNTY

Harlow Hill	21A/03B 1
Lower Branch Lake	21A/03B 2
Middle Ohio	20P/14C 1
Upper Branch Lake	21A/03B 3

VICTORIA COUNTY

Cape Smokey	11K/09B 1
Kellys Mountain	11K/08B 1
MacLeods Point (Tripoli Lake)	11K/02A 2
Tarbotvale	11K/07A 1

YARMOUTH COUNTY

Barclay Lake	20P/13D 1